GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH
MINISTRY OF WATER RESOURCES

REPORT ON
FAP-18 : TOPOGRAPHIC MAPPING

FLOOD PLAN COORDINATION ORGANIZATION
Dhaka, September 1995

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CONTENTS

		Page
Chapter - A		
1.	Introduction	1
2.	Objectives	1
3.	Progress of Work	2
3.1	Finida Assistance	2
3.2	France Assistance	3
3.3	CIDA Assistance	3
3.4	EEC Assistance	4
3.5	Swiss Asssitance	4
3.6	Data from Survey of Bangladesh	4
3.7	Data from BWDB	5
3.8	Data from SPARRSO	5
3.9	Data from BIWTA	5
3.10	Revision of FAP-18	5
3.11	Establishment of a productive Mapping Cell	6
3.12	Institutional building for the Mapping Cell	6
3.13	Conditions of installation of instruments	6
3.14	Maintenance of instruments	7
3.15	Training	7
4	Method of Survey, Mapping & Mosaicing	7
4.1	Control Survey, aerial photography & mapping	7
4.1.1	Ground Control Surveys	7
4.1.1.1	GPS Survey	8
4.1.1.2	Survey Markers	8
4.1.1.3	Observations	8
4.1.1.4	Computations	8
4.1.1.5	Densification Surveys	9
4.1.1.6	Transformation to Horizontal datus of Bangladesh	9
4.1.1.7	Projection Coordinates	11
4.2	Vertical Ground Control	11
4.2.1	General	11
4.2.2	Recognition of existing precise level-Net	12
4.2.3	Building of Bench marks	12
4.2.4	Methods of Second & third order levelling	13
4.2.5	River crossing	13
4.2.6	Spot height levelling	14
4.2.7	Equipment used	14
4.2.8	Personnel deployed for field works	14
4.2.9	Status of agreement among BMs of Survey of Bangladesh	15
4.2.10	Computations with old BMs on the Western Side of Jamuna	15
4.2.11	Final Adjustment	16
4.2.11.1	Second order lines	16
4.2.11.2	Third order lines	17
4.2.11.3	Spot height levelling	17

		Page
4.3	Aerial photography	25
4.3.1	Technical	25
4.3.2	Execution of photographics	25
4.3.3	Aerial triangulaion	25
4.3.4	Use of aerial photography for pilot project areas	26
4.3.5	Photo Mosaics	29
4.3.5.1	Genral steps	29
4.3.5.2(a)	Mosaic production	29
4.3.5.2(b)	Details of photomap	33
4.4	Checking of works	37
4.4.1	Technical checking by National Board of Survey, Finland	37
4.4.2	Technical Checking by Survey of Bangladesh	37
4.5	Final Products	37
4.6	Rectified photo-mosaics of North Noakhali Area (1:10,000)	38
5	Spot Image maps from 1989 through 1995 (Specifications & Coverage)	38 (38-45)
6	Inventory of Tpoo-data	38
7	Implications of FAP-18 study	47

Chapter - B

1	Surveyof Bangladesh (SOB) (Availabale Topograpahic data)	50
2	Recent Aerial photography coverage	51
3	List of all aerial photography	52-55
4	SOB GPS datum	56
5	Geodetic control (GPS & lst order level net)	57
6	Special features of different SOB Maps (coverages)	(58-82)

Chapter - C

1	Topo-Map series (4"= 1 mile) (BWDB & SOB)	(83-84)
2	Topo-Map series (8"=1 MILE) (BWDB & SOB)	(85-86)
3	Coverages	87
4	Old irrigation planning maps (1:40,000)	(88-89)
5	WARPO's Planning maps	(90-93)

Chapter - D

1.	Directorate of Land Record & Survey (DLR&S) (Available maps)	(94-99)

		Page
Chapter - E		
1	Bathymetric charts of BIWTA	(100-101)
2	Horizontal (GPS) and vertical (2nd order) control provided under mapping for Development Coastal Area with 1:30,000 aerial photography	102
3	Spot height levelling	103
4	Proposed final products of BIWTA's mapping project	104
Chapter - F		
1	Local Govt. Engineering Department (LGED) Thana base maps	(105-106)
2	Status of Thana Base map Preparation (list)	(107-123)
Chapter - G		
1	Space Research & Remote Sensing Organization (SPARRSO) (Maps sprepared)	(128-133)
2	Computer Compatible tapes available	(134-136)
Chapter - H		
Agro-Ecological Maps GOB/UNDP/FAO		(137-139)
Chapter - I		
1	Soil Resources Development Institute (Maps prepared)	140
2	Drought Prone Ara Map (1:100,0000)	(141-142)
3	Rabi and Pre-Kharif Drought Classification	(143-144)
4	Soil Texture Map (1:50,000)	(145-147)
5	Land Use Association	(148-149)
6	Soil Association	(150-152)
Chapter - J		
1	Geological Survey of Bangladesh (Availabale Maps)	153
2	Geological Map of Bangladesh	(154-155)
3	Agro-magnetic Anomaly Map	(156-157)
4	Bouguer Gravity Anomaly Map	(158-159)
5	Geological Map of North Eastern Part of Bangladesh	(160-162)

INTRODUCTION

This report has been prepared to consolidate the information on the Topographic Survey, Mapping and remote sensing activities done to support the Flood Action Plan studies. Information on various types of topo-data, maps, aerial photographs and Landsat imageries available in GOB and other agencies of Bangladesh have been included in this report. It has 10 chapters and the essence of each chapter is given below which will help to locate specific point of interest. The information compiled in this report has been collected from relevant GOB and other agencies working in Bangladesh. It is intended that the report will help to locate the source and procedure of procurement of suitable topographic data needed in different field of activities. It has been prepared in the Flood Plan Coordination Organization with the assistance of Mr. A. Hakim, Mapping Specialist.

The essence of the chapters are:

		Page
Chapter - A Topographic Mapping (FAP-18)		1
	o Objectives & Progress of Work	
	o Assistance from FINIDA,France, CIDA, EEC & Switzerland	
	o Topo data from SOB, BWDB, BIWTA & SPARRSO	
	o Revision of FAP-18 & establishmnt of the Mapping Cell	
	o Aerial photography, ground control adjustments and mapping for FAP-18	
	o Checking by National Board of Survey and SOB	
	o Final Products	
	o Multispectral SPOT Mosaics 1989 through 1995 from France	
	o Printing of 1:50,000 revised maps for FAP-18	
	o Inventory of Topo data	
	o Implications of FAP-18 study	
Chapter - B Survey of Bangladesh		50
	o Data availability	
	o Recent & Old aerial photography	
	o GPS datum & geodetic control nets	

			Page
Chapter - C			83
BWDB & WARPO	o	4"=1 mile & 8"= 1 mile Water Development Maps	
	o	Irrigation Planning Maps (1:40,000)	
	o	WARPO's Planning Maps	
Chapter - D			94
Directorate of Land Records & Surveys	o	Cadastral Maps	
	o	Thana maps	
	o	Administrative maps	
Chapter - E			100
Bangladesh Inland Water Transport Authority	o	Bathemetric charts	
	o	Aerial photography ground control and field surveys for the Coastal area	
	o	Proposed final products	
Chapter - F			105
Local Govt. Engineering Department (LGED)	o	Thana Base Maps (1:50,000)	
	o	Status of preparation of Thana base maps	
Chapter - G			128
Space Research & Remote Sensing Organization	o	Available maps	
	o	CCTS of satellite imageries	
Chapter - H			137
GOB/UNDP/FAO	o	Agro-ecological maps	
Chapter - I			140
Soil Resources Development Institute (SRDI)	o	Soil Resources Dev. Maps	
	o	Drought Prone Maps	
	o	Soil Texture Maps	
	o	Land Use & Soil Association Maps	
Chapter - J			153
Geological Survey of Bangladesh	o	Geological Maps	
	o	Agro-magnetic anomaly maps	
	o	Gravity Anomaly map	

Chapter A

FAP-18: TOPOGRAPHIC MAPPING

1. Introduction

While designing the Flood Action Plan it was observed that up-to-date aerial photography and topographic data were the most important prerequisite for multidisciplinary FAP studies and subsequent implementation of water resources management projects. It was then felt necessary to make an assessment on the situation pertaining to the immediate availability of up-to-date topographic data to cover Flood Action Plan areas. It was found that no aerial photography after 1983 was taken to cover FAP areas, nor any satellite imagery with correct geographical position of ground details was ever planned. No homogeneous geodetic net for Planimetric and Altimetric controls were established based on a single datum. Also no up-to-date large scale map series with 1' foot contour interval nor new or revised 1:50,000 scale topographical maps were available so as to go ahead with the planned studies.

Consequent on the multidisciplinary nature of studies, it was also observed that a very large number of various topographic data were necessary for FAP studies and a considerable time was needed to ensure availability of such data. It was then felt imperative to plan for availability of urgent topo-data necessary for these studies specially for the areas where simultaneous activities of different FAP components were involved (Jamuna Area).

Considering these factors FAP-18: Topographic Mapping was designed as a supporting project for the Flood Action Plan.

2. Objectives

Basic objectives of FAP-18 was to obtain up-to-date aerial photographs, geodetic data, satellite imageries and accurate maps for the purpose of undertaking various studies, facilitate planning, design and implementation of projects and establishment of a Mapping Cell to ensure availability of topographic data for these studies. The following specific tasks were included in FAP-18 for execution.

- oo Black & white and infra-red aerial photography on medium and large scale covering respectively the North-Central Region and the pilot project areas of Jamalpur, Tangail and Sirajganj.

- oo Establishment of adequate GPS points in the NCR and NWR.

- oo Establishment of about 1100 kms of 2nd order level net for the NC Region including the Jamuna river banks.

- oo Preparation of photo contour mosaics for Jamalpur, Tangail and Sirajganj areas.

- oo Arrangement for printing and supply of 1:50,000 revised maps covering NCR to all the relevant FAP Consultants.

- oo Acquisition of multi-spectral spot images (France) for dry season of 1989 and for dry and wet season of 1990 through dry season of 1995.

- oo Enforcement of quality control on survey and mapping works through SOB.

- oo Establishment of a co-ordinating Mapping Cell.

- oo As the studies of different FAP components continued, it was found that several other types of topographic data available in different government agencies which could support component FAP studies were also necessary. These were procured and supplied under FAP-18.

3. **Progress of work so far made under FAP-18 is as follows:**

3.1 **Through Finida Assistance:**

- oo 1:50,000 scale (B&W) aerial photography for about 22,000 sq. kms covering the North Central Region and 1:20,000 scale (B&W) photography for 10,000 sq. kms. covering the pilot project areas of Jamalpur, Tangail and Sirajganj have been taken and supplied to the consultants.
- oo 1:50,000 scale infra-red photography for Jamalpur area (800 sq. kms), 1:20,000 scale infra-red photography for Tangail (100 sq. kms) and Sirajganj (100 sq. kms) areas were also taken.
- oo A GPS net of 146 stations over North Central and North Western Regions was established with monumentation and the station co-ordinates were supplied to Consultants.
- oo A second order level net of 2468 kms and a 3rd order level net of 312 kms in the North Central Region were established with connection to water level gauge stations of this region. These were checked by Survey of Bangladesh and adjusted heights of BMs based on the West Bank datum were supplied to the study consultants.
- oo For photo-contour-mosaicing, 3920 kms of spot heighting for Jamalpur, 460 kms for Sirajganj and 453 kms for Tangail have been completed.
- oo 1:20,000 scale photo-maps with 0.50m contour interval for Jamalpur and 1:10,000 mosaics with 0.25 m contour interval for Tangail and Sirajganj were prepared by

FINNMAP. These were examined by Survey of Bangladesh were received in FPCO and supplied to the Consultants.

oo While connecting right bank BM heights with those of left bank of the Jamuna river, a datum difference of about 20 cms was observed by Finnmap. SOB was requested to check this datum change and they also found that the datum difference observed by Finnmap was correct. BM adjusted heights of North Central Region (both banks of the Jamuna) were supplied to Consultants.

3.2 Through France Assistance:

oo Six additional sets of photomaps of 3.1 above were arranged with France financial assistance and supplied to Consultants including one set to SOB.

oo Spot Image on 1:50,000 scale: Multi-spectral spot mosaics of March, 1989 for the entire FAP area and those of March & October 1990, 1991, 1992, 1993 and 1994 covering the main rivers were received and supplied to the relevant FAP study consultants including one set of each year (dry & wet) to SOB. Further arrangements have been made with SPOT IMAGE France for supply of 1:50,000 scale spot images covering the main rivers for dry season of 1995. These have now reached Dhaka Airport.

oo 44 Nos. of 1:50,000 scale topo-maps revised by SOB have been printed off with fund provided by the Government of France. SOB also printed additional 91 nos. of revised maps. These maps were supplied according to the demand of the Consultants.

3.3 Through CIDA Assistance for FAP-6 (North-East Region)

oo Arrangements were made with SOB to carry out 2760 kms of 2nd order levelling in the FAP-6 (North East Region) area. Construction of monuments and field levelling have been completed with connections to BWDB 77 water level stations. Connection levelling with FINNMAP's level BMs at Gulshan, Mauchak, Begunbari (Jamalpur) and Kabilpur (Akhaura) have also been completed. 10 Nos. of precision level machines, 5 Nos. of precision level and 4 Nos. of precision level machines with level staff were arranged respectively from CIDA, National Board of Survey, Finland and BWDB for execution of levelling in FAP-6 area. The machines of CIDA and NB of Survey, Finland have been given to SOB as donation.

oo 1:15,000 scale aeral photography covering about 3000 sq. kms. were taken in the Kalni river area for FAP-6.

3.4 **Through EEC Assistance:**

Additional sets of 1:50,000 multispectrial spot image as in 3.2 above for main rivers were also arranged for FAP-24 and supplied to the Consultants of FAP-21/22 and FAP-24. Approval for supply of spot images for March 1995 was also given to the supplier and these have also reached Dhaka Airport.

3.5 **Through Swiss Financial Assistance:**

A co-ordinating mapping cell was established in FPCO with one expatriate and one local survey and mapping experts to ensure availability of topographic data necessary for multidisciplinary FAP-studies. The expatriate consultant left after a few months of his part time service.

3.6 From Survey of Bangladesh:

- oo 1:30,000 aerial photographs of 1974-75 covering entire FAP area were supplied to the concerned consultants.
- oo 1:50,000 aerial photographs of 1983-84 covering the entire FAP-area were also supplied to the consultans.
- oo 1:50,000 scale recent edition reprints other than those revised as in 3.2 above were collected from SOB and supplied tothe concerned FAP Consultants.
- oo Description of existing BMs with their heights were collected from SOB and supplied to the Consultants.
- oo 1:10,000 scale topo-maps of 1989 with 1' foot contour interval covering Dhaka City and surrounding were arranged for FAP-8B.
- oo Maps on 1:250,000 scale were also collected from SOB and supplied to the Consultants.
- oo 1:30,000 scale aerial photographs of the Coastal aea taken during 1990 for BIWTA's "Mapping for Dev.-Coastal area" project were collected from SOB and supplied to FAP-Consultants including those for FAP-7.
- oo FINNMAP collected GTS station coordinates and existing BM data from SOB for GPS and precision level survey for FAP-18.
- oo 1:50,000 scale maps from SOB covering the entire FAP area were supplied to SPOT IMAGE, FRANCE for geographical correction of details of SPOT mosaics. These were taken back after completion of the work.

3.7 From Bangladesh Water Development Board:

oo A large number of 4"=1 mile maps with 1' foot contour interval covering FAP areas were collected from BWDB and supplied to the Consultants.

oo 8"=1 mile BWDB maps with 1' foot contour interval covering certain FAP areas were also supplied to the Consultants.

oo FAP-24. Collected BWDB's water gauge reference BM heights for comparison with theheights supplied by FINNMAP.

oo Consultants also collected FCD maps from BWDB.

3.8 From: SPARRSO:

oo FAP-1 collected 1:250,000 scale landsat (B&W) imagery for theJamuna river area for 1973, 1976-77, 1980-81, 1984-85 and 1887-88 and also 1:50,000 landsat 1987 (B&W) from Kamarjani to confluence with the Ganges.

3.9 From BIWTA:

oo BIWTA was requested to arrange preparation of 100 Nos. of 1:10,000 scale rectified photo-mosaics covering North Noakhali area for FAP-5. These have been prepared and deposited to SOB for future works in the FAP-5 area. These can be collected any time as required.

3.10 Revision of FAP-18

oo During these activities it was observed that fresh large scale (1:10,000) contour maps with 0.25m contour interval covering the FAP-areas will be necessary for design and implementtion of FAP projects to be identified as end products of FAP-studies. There should also be an arrangement for periodical revision of such maps for future use. SOB does not maintain a large scale contour map series. They prepare project maps only on payment. These large scale contour maps are necessary immediately for water resources management of the country. Hence an arrangement was felt necessary to develop an institution which will be able to revise the existing large scale contour maps prepared by BWDB Survey parties during 1960s and/or prepare large scale contour maps as necessary for water resources management activities in priority areas. To this end it was decided to establish a productive mapping cell in BWDB under FAP-18 with the existing staff of the two survey parties of BWDB and import of necessary survey, photogrammetric and printing machines. In order to realize this objective FAP-18 was

revised incorporating import of Survey, mapping and printing instruments and arranging training of BWDB staff. The revised project was approved by the Government.

3.11 Establishment of a Productive Mapping Cell - Import of Machineries

After the approval of the revised FAP-18 by the Planning Commission on 31.12.93, Ministry of Water Resources approached ERD for allocation of requaired foreign currency for import of necessary survey and mapping instruments for the Mapping Cell. An amount of DM 3.09 million was allocated by the ERD from the German Commodity aid programme. Subsequently it was decided with the concurrence of the Ministry of Water Resources that the Mapping Cell would be established in the Directorate of River Morphology and Research Circle of BWDB. International Tender documents were then prepared in RM&RC. Scrutiny of specifications, floating of tenders, acceptance of quotations, issue of letter of intent, contracting with the suppliers and opening of LC have been done by the Water Board. The utilization period of allotted fund has been extended up to October, 1995. Field survey and photogrammetric instruments have already reached Dhaka Airport and printing machines are likely to come soon.

3.12 Instititional building for the Mapping Cell

It was decided by the Board that the mapping cell was to be accommodated in a new building to be constructed in the premises of the Hydrology Complex of BWDB in Green Road and necessary amount was allocated for the purpose. The construction of the building is expectd to be completed soon.

3.13 Installation of instruments

Manufacturers' engineers will install the instruments in the Mapping cell as per contract. Water Board will ensure the following installation conditions:
Input variations ± 10% of nominal voltage
Floor covering and furniture - antistatic
Max. temperature range - 15°c to 28°c
Recommended Temperature range - 20°c to 25°c

For precision measurements in the machines:

Maximum deviation from mean - ± 1°c
Maximum temperature change - 0.5°c per hour

Maximum relative humidity - 30% to 80%
Recommended relative humidity - 40% to 60%.

3.14 Maintenance

Air Conditioners and dehumidifiers which are necessary for maintenance of SEG VI, film vault, theodolites, levels, GPS machines, system computers etc. will be procured by BWDB locally with cost from ADP. BWDB will procure other equipment, stationery for the mapping cell with costs also from ADP.

3.15 Training

As per contract documents manufacturers are to arrange training of Mapping cell staff in individual machines for about 15 days after installation and later on in the manufacturer's factory for some period. For this suitable hands are under selection from the Mapping cell set-up.

Available experienced surveyors/D-men of the two survey parties of BWDB will impart training on fair drawing to the new hands of the mapping cell. In the next field season, surveyors of the above two parties experienced in traverse, triangulation, levelling and field verification can also give training in these trades to the new hands.

Further yearly scholarships awarded by Holland for advanced training in the international training centre for earth sciences (on production-photogrametry, cartography, aerial photography), Holand may be availed of by the the Water Board for officers of the Mapping cell. Royal Dutch Embassy communicates availability of such scholarship to ERD. Final selection is done in the Establishment Division. Moreover, GTZ (German Technical Assistance programme) also arranges advanced training in photogrammetry under the University of Stuttgurt, Germany. For this GTZ may also be approached.

4. Method of Survey & Mapping/Mosaicing adopted by FINNMAP for FAP

4.1 **Ground Control Surveys** (Planimetric and Altimetric), Aerial photography aerial triangulations and photo-contour-mapping done by FINNMAP OY for Flood Action Plan under FAP-18.

4.1.1 Ground Control Surveys

4.1.1.1 GPS-Survey

Geodetic control over project area (Jamuna Area) including FAP-2 area was established using static relative GPS-surveys. Total of 146 stations were observed.

4.1.1.2 **Survey markers**

Permanent survey markers were constructred according to specifications of Survey of Bangladesh.

4.1.1.3 **Observations**

GPS field surveys were accomplished using four (4) Ashtech L-XII GPS-receivers. Ashtech L-XII is a 12-channel, L1-frequency GPS-receiver. One to three observation sessions per day were made using four to eight satellites. Length of the sessions varied from 75 to 180 minutes.

Total number of successfully observed stations was 146 including:

16 1st order stations
130 2nd order stations

4.1.1.4 **Computations**

Satellite Signal Processing

Carrier phase observations of the GPS-satellites were processed using double difference observables. Double difference processing was done using Ashtech Inc.'s Geodetic Post Processing Software (GPPS).

Primary Network

Primary stations of Flood Action Plan were adjusted together with the primary network of Coastal Mapping Project. The Coastal Primary network consists of 82 baselines and 57 stations. Point positioning solutions of ten stations were used as initial approximate coordinates for the network adjustment. The network was adjusted in a minimum constraint adjustment using free network technique. The WGS-84 coordinate differences solved in baseline computations were used as observations and WGS-84 coordinates of the stations as unknown. The

relative RMS of the network adjustment was 10 ppm. That for the first order specifications is (1:100,000), 10 ppm.

4.1.1.5 Densification Surveys

Densification surveys consist of two networks and several traverses. Relative RMS of the networks and traverses were better than (1:50,000) 20 ppm, which is the tolerance for second order measurements.

4.1.1.6 Transformation to the New Horizontal Datum 1993 of Bangladesh.

According to the decision of Survey of Bangladesh, the new datum was to be established based only on one old station, Gulshan point with following coordinates:

LAT: 23° 47' 49".547 N
LON: 90° 25' 6".742 E
H : 9.03538 m

Adjustment was first carried out using Everest Ellipsoid with following values for the spheroid:

a : 6377 304 m
1/f : 300.8

Later in January 1993 Survey of Bangladesh supplied new spheroid values based on different meter-to-foot conversion, which are:

1 foot = 0.30479947 m

and consequently this gives new spheroid values:

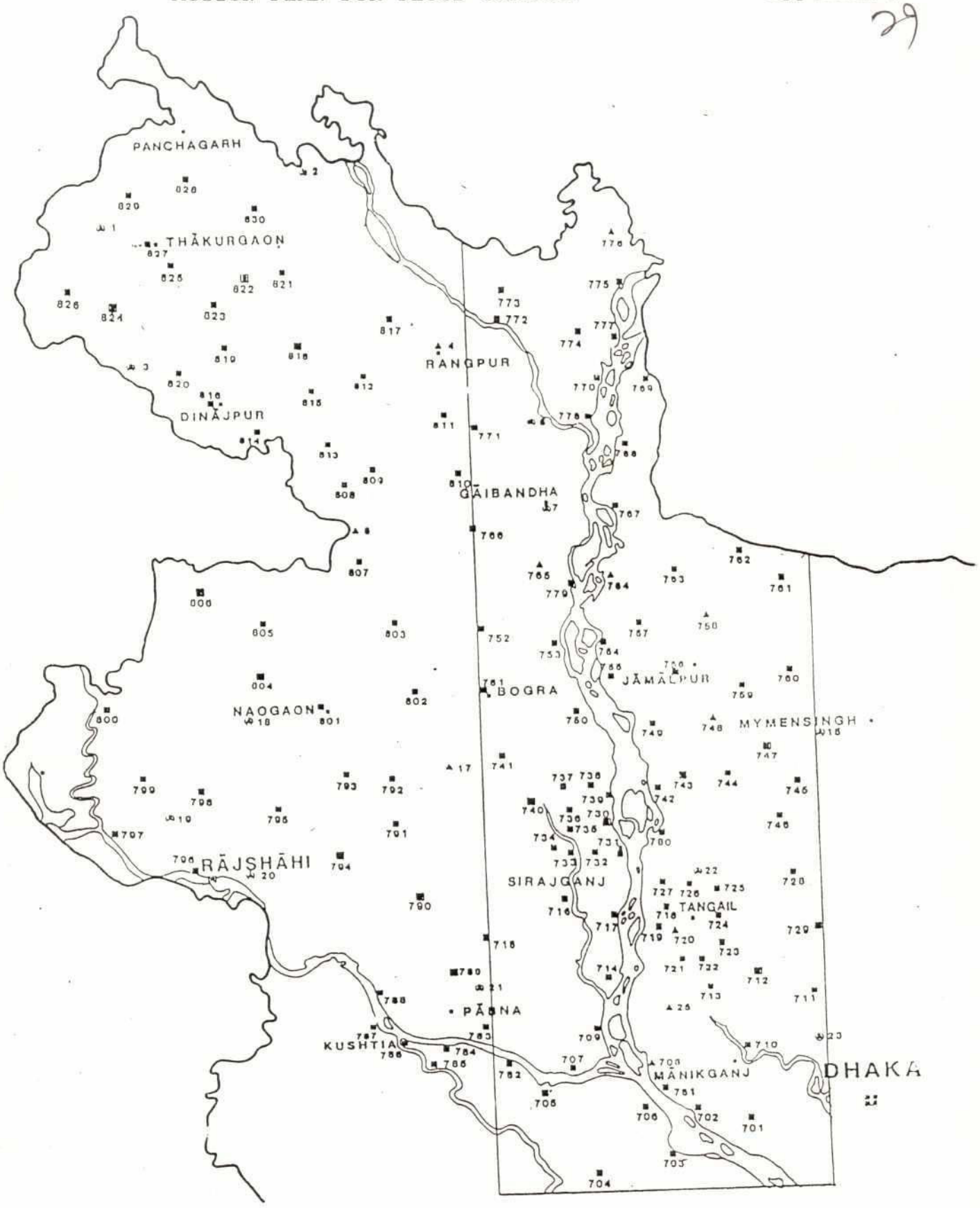
a : 6377 304 m
1/f : 300.8

New adjustment was carried out using these new values. Final mosaics were also transformed after this in to the new system.

In addition levelled heights of 19 stations were used in adjustment to fix the new network relative to the local geold.

The scale of the new datum is that of GPS. Transformation parameters from WGS-84 to the new datum were solved in a least-squares adjustment. Parameters were solved for Molodensky-Badekas transformation model.

Index A
Appendix A
29



FAP-18, GPS stations established with monumentation by FINNMAP OY

The transformation means, that the coordinates of Gulshan point were held fixed and the coordinate system was rotated so, that the square sum of geoidal undulations, height differences between geodetic heighs of the stations determined with GPS and orthometric heights of the stations determined by levelling, reached minimum.

The RMS-error in the parameter adjustment was 0.45 m. This means that geodetic heights of the stations can be considered as orthometric with an accuracy of 0.45 m and that the new datum can be considered to be oriented with respect to local geoid three-dimensionally with same accuracy.

After determination of the transformation parameters WGS-84 coordinates of all stations were transformed to the new horizontal datum 1993 of Bangladesh. One set of co-ordinates of GPS stations was supplied to Survey of Bangladesh.

4.1.1.7 Projection Coordinates

Geodetic latitudes and longitudes of all GPs-stations in the hotizontal datum 1993 of Bangladesh were converted to map-projection grid-coordinates as determined in the technical speifications:

Projection	:	Universal Transverse Mercator (UTM)
Scale factor of Central Meridian	:	0.9996
Unit	:	Metre
Central Meridian	:	90 E
Grid coordinate value of Central Meridian	:	500 000 m
Argument of Longitude	:	87 E < L < 93 E
Latitude of origin	:	Equator, 0 N
Grid coordinate value of northing at origin	:	0 m

Appendix A: Location diagram of GPS stations.

4.2 Vertical Ground Control

4.2.1 General

The vertical control network consists of bench marks of second and third ordr.

In second order levelling check the second order tolerance of +/- 8.0 $\sqrt{K}$ mm (K in kilometres) between forward and backward levelling was always met.

In third order levelling check the third order tolerance of +/- 12.9 $\sqrt{K}$ mm (K in kilometres) in a loop or a line was always met.

In spot height levelling for vertical terrain model the tolerance of +/-100 $\sqrt{K}$ mm (K in kilometres) was always met.

Third order bench marks were established to serve as starting points in spot height levelling.

Water level gauge reference stations of the area were connected to the second order lines as second order bench marks.

4.2.2. Recognition of Existing Precise Levelling Network

In all 33 old bench marks were found, 23 west of river Jamuna, 9 east of Jamuna and 1 south Padma. Only few of them did tally with the neighbouring bench marks within 1st order tolerances.

No previous records about the consistency of the network across river Jamuna existed. Therefore, discrepancies between west and east bank of Jamuna rivers could be expected.

Because only few bench marks in the old lines existed, a decision was masde to have the old precise levelling lines built and re-levelled to meet the second order standards.

Also levelling across the river Jamuna was required to bring the new levelling networks of different regions in to one uniform system.

4.2.3. Building of Bench Marks

In construction of new bench marks the standards of Survey of Bangladesh were followed.

Following amounts of new bench marks were built:

2nd order	714
3rd	41
Total:	755

Sixty of the GPS points were also levelled. GPS markers were built according to Survey of Bangladesh's standards.

For river crossing levellings lighter temporary pillars were erected on the river banks.

Appendix B&C: Second and third order Bench Marks.

4.2.4 Methods

Second Order Levelling

Automatic levels and micro meters were used. Staffs were double reading invar or wooden staffs. For each of the forward and backward levelling four separate readings were taken. Two of the readings came from different staff-scales on the first ground-position, second ground-position providing another two readings.

This method provided 8 independent readings for each levelled distance. Mean of the 8 readings was used as final height difference in computations.

Stability of ground-positions was secured by using heavy metal ground plates.

Equal staff-instrument distances forwards and backwards were measured by tapes. Maximum allowable staff-instrument distance was 50 metres on firm land.

Instrument was always shadowed during observation work.

Stafs were kept in up-right position during observations by build-in bubble-levels.

Third Oder Levelling

Method was same as in 2nd order levelling with only one ground position in both directions of levelling.

4.2.5 River Crossing

Many river divide the project area. 26 separate river crossing measurements were done in order to combine all levellings in to one network.

In river crossings two methods were used. Less than 200 metre-wide rivers were lvelled normally. For more than 200 metre-wide rivers simultaneous reciprocal trigronometric method was applied.

4.2.6 Spot Height Levelling

Spot height levelling was carried out as spirit levelling. All staff and instrument positions were pricked and numbered on pictures during the levelling in the field.

Third and second order bench marks were uksed as starting and closing bench marks.

Spot height lines were run at 300 m distances with spot height interval of 100 m along the lines.

4.2.7 Equipment

Levelling	Instrument Mark	Amount	Staff Description	Amount
2nd order and 3rd order levelling	Wild NAK-2 Sokkisha B1C	8 4	Invar/wooden double scale	24
Spot height levelling	Wild NA-24	12	Wooden single scale	24
River crossing levelling	Wild TC1600	2	Wooden single scale	4

4.2.8 Personnel and Field Works

Personnel used in various kinds of levellings:

Levelling	Teams	Surveyors	Helpers
2nd order	8	8	32
3rd order	4	4	16
Spot height	12	12	48
Total	24	24	96

Field observations ere commenced in November 1990 and were completed by the end of March 1992.

4.2.9. Existing Bench Marks of Survey of Bangladesh

Before this project no levelling across the river Jamuna had been successfully done in Bangladesh.

For different Flood Action Plan projects it was essential that different parts of the country would be brought into same datum.

Therefore Jamuna river was crossed at two locations: Bahadurabad and Sirajganj.

The river crossings confirmed that the old bench marks on both sides of river Jamuna could not be adjusted in one network within 2nd order tolerances. They would tallywithin adjacent bench marks on same side of the river, but could not fit in to same system across the river.

According to instructions of Survey of Bangladesh Flood Action Plan's 2nd order bench marks were adjusted using old bench marks of the western side of Jamuna river.

The present mean sea level datum of Bangladesh comes from India and is likely to be more correct in western parts of Bangladesh. The eastrn bench marks are at the end of over one thousand kilometre long hanging line.

This also explains well the discrepancies of about 20 cm of the old bench marks in the eastern parts.

4.2.10 Computations and Final Adjustment

Datum

According to instruction of Survey of Bangladesh the second order network has been tied to 17 old bench marks on the western side of river Jamuna.

Connection Bench Marks:

Name of bench mark	Number used in adjustment	Height (m)
Rangpur DC Office	108001	31.9897
Karmichael College	108016	32.1186
Mithapukur	108003	28.5558
Uzipur	108004	24.5394
Dhaperhat	108005	24.4056
Palasbari	108006	22.7643
Gobindagonj	108008	20.9199
Nowdapara	108009	19.9955
Bogra Circuit House	300751	19.1177
Ashekpur	108010	18.1542
Kalico Cotton	108101	12.2572
Dhopa Ghata	108103	11.7488
Ataikula	108105	11.3980
Gang Hati	108106	12.3837
Char Gobindapur	108108	13.6925
Kashinathpur	108109	10.4973
Natuabari	108110	12.6870

4.2.11 Final Adjustments

All networks and lines have been adjusted with adjustment program MMH200. In first phase program computes heights for knot-points and in second phase line wise heights for other bench marks in the network.

Adjustment program MMH200 has been developed by the National Board of Survey of Finland. One set of adjusted heights was supplied to Survey of Bangladesh.

4.2.11.1 Second Order Lines

26 river crossing measurements were included.

Adjustment stattistics:

Fixed points	17
Adjusted points	850
St. error of one km levelling	4.39 mm
Length of lines	2468.12 km
Instrument stations	25184

4.2.11.2 Third Order Lines

All third order lines have been connected to second order bench marks or knot points and adjusted in one block.

Adjustment statistics:

Fixed points		40
Adjusted points		52
St.error of one station	2.18 mm	
St.error of one km levelling	6.59 mm	
Length of lines	306.96 km	
Instrument stations	2891	

Appendix: Line diagrams
Third order

4.2.11.3 Spot Height Levelling

Spot height levellings were adjusted in blocks of about 25 km^2.

Jamalpur pilot area:

Adjustment statistics:

Blocks:		46
Fixed points		55
Adjusted points	48859	
Average standard error of one station	15.93 mm	

Sirajganj pilot area:

Adjustment statistics:

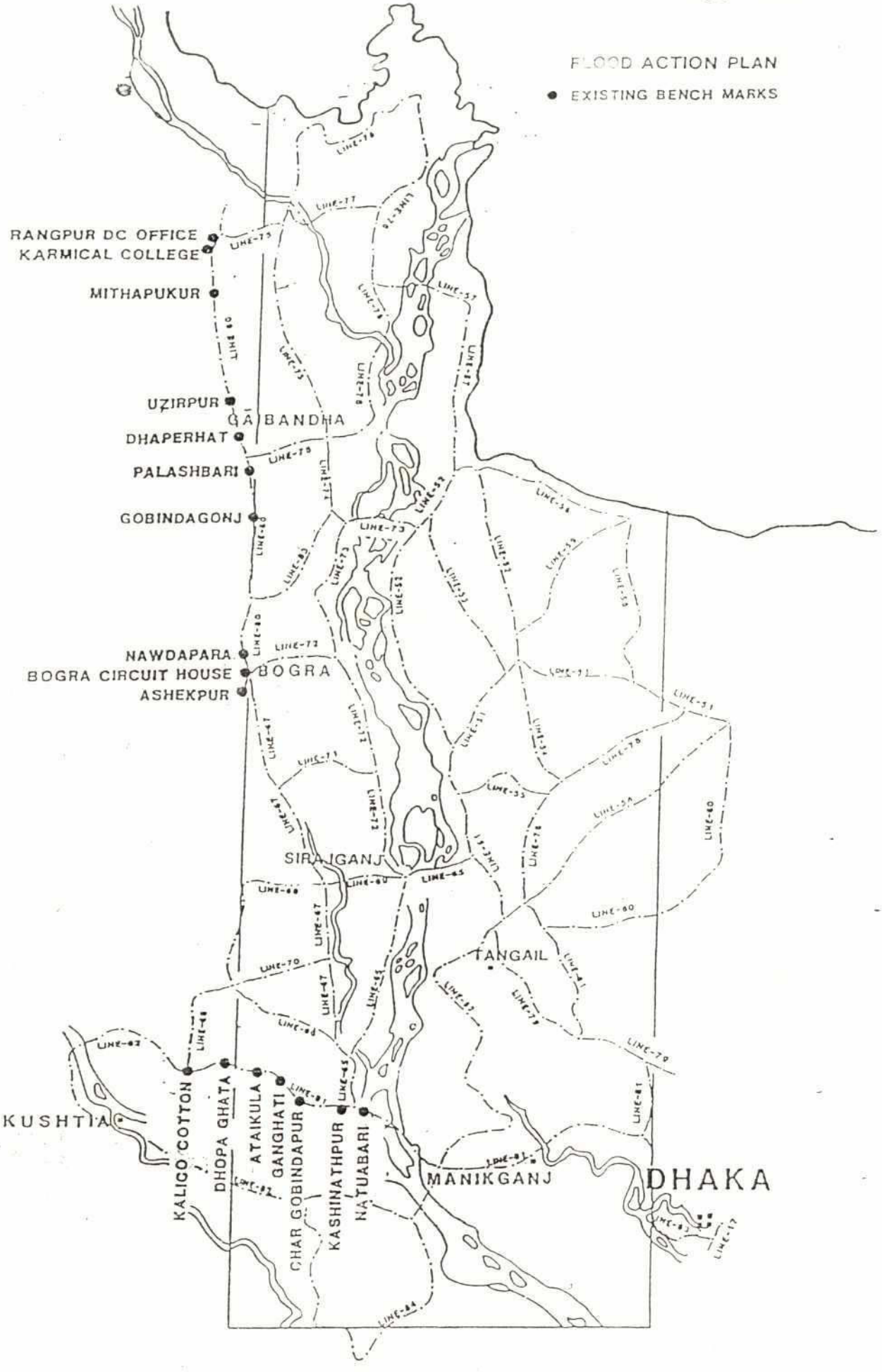
Blocks:		10
Fixed points		16
Adjusted points	5505	
Average standard error of one station	12.85 mm	

Tangail pilot area:

Adjustment statistics:

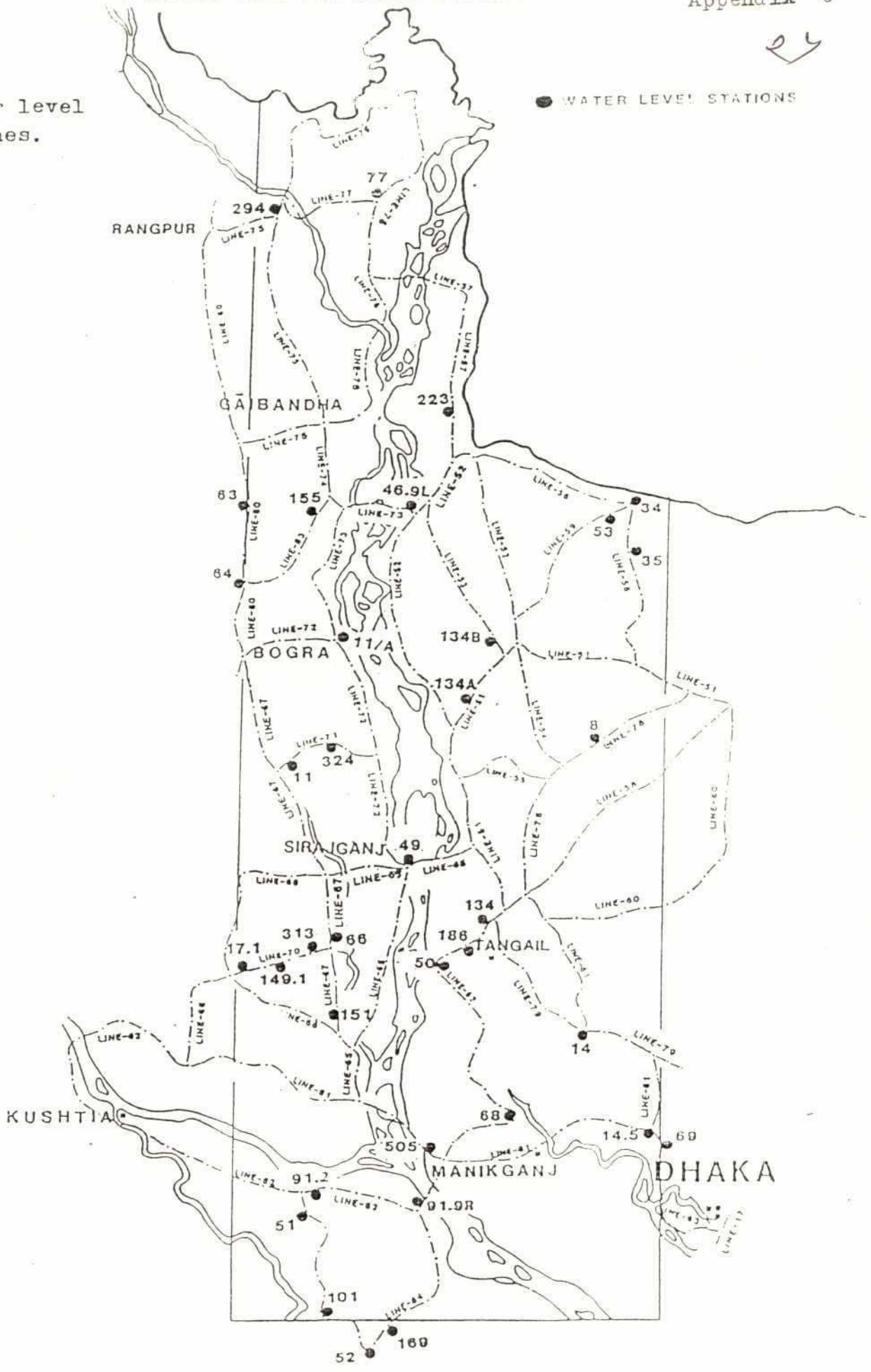
Blocks		13
Fixed points		21
Adjusted points	8452	
Average standard error of one station	15.37 mm	

Appendix B


FLOOD ACTION PLAN
EXISTING BENCH MARKS
RANGPUR DC OFFICE
KARMICAL COLLEGE
MITHAPUKUR
UZIRPUR
GAIBANDHA
DHAPERHAT
PALASHBARI
GOBINDAGONJ
NAWDAPARA
BOGRA CIRCUIT HOUSE
BOGRA
ASHEKPUR
SIRAJGANJ
TANGAIL
KUSHTIA
KALIGO COTTON
DHOPA GHATA
ATAIKULA
GANGHATI
CHAR GOBINDAPUR
KASHINATHPUR
NATUABARI
MANIKGANJ
DHAKA

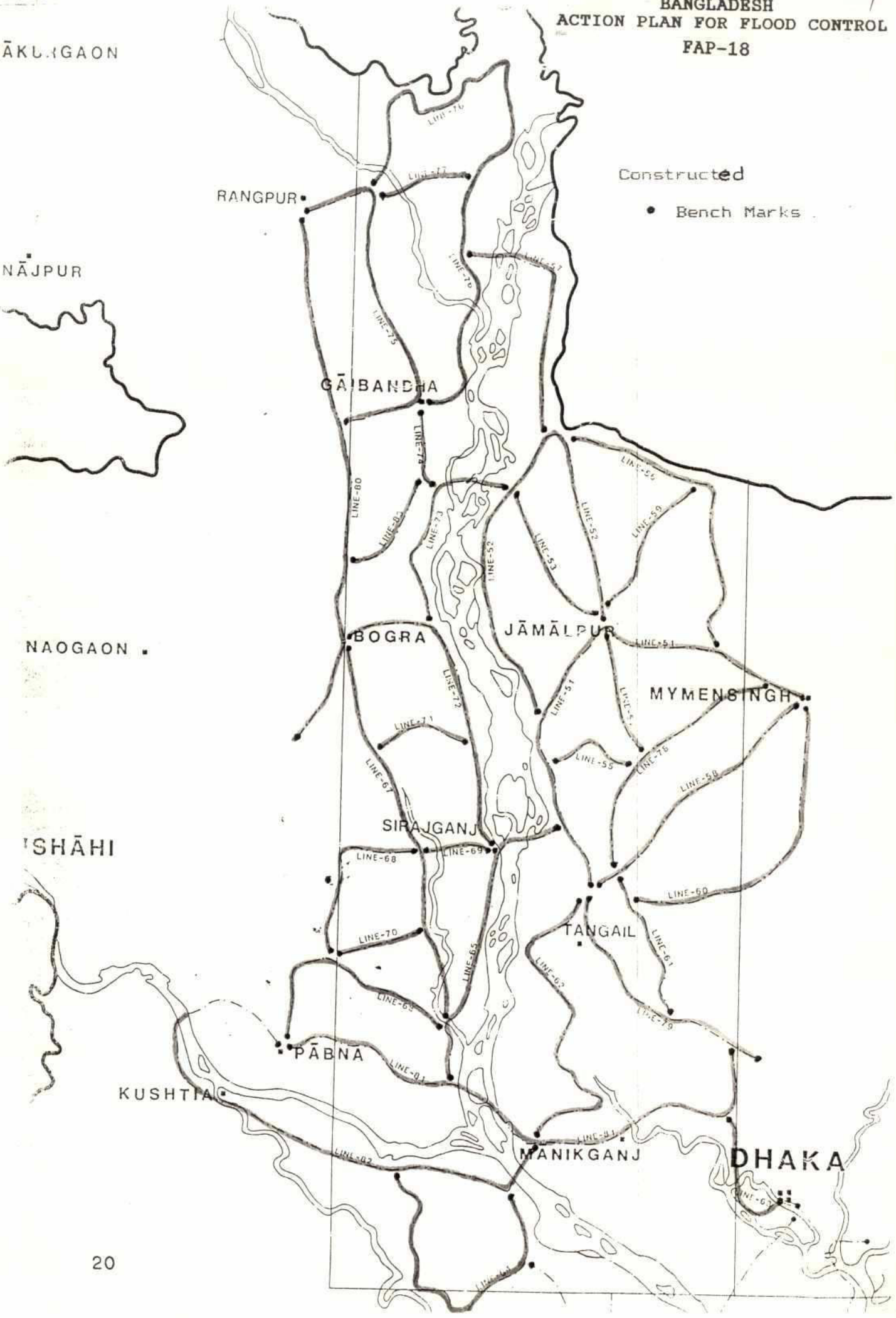
—·— 2nd order level Lines.

● WATER LEVEL STATIONS



FAP-18, Water level stations connected with 2nd order Level Lines done by FINNMAP OY(BMs monumented)

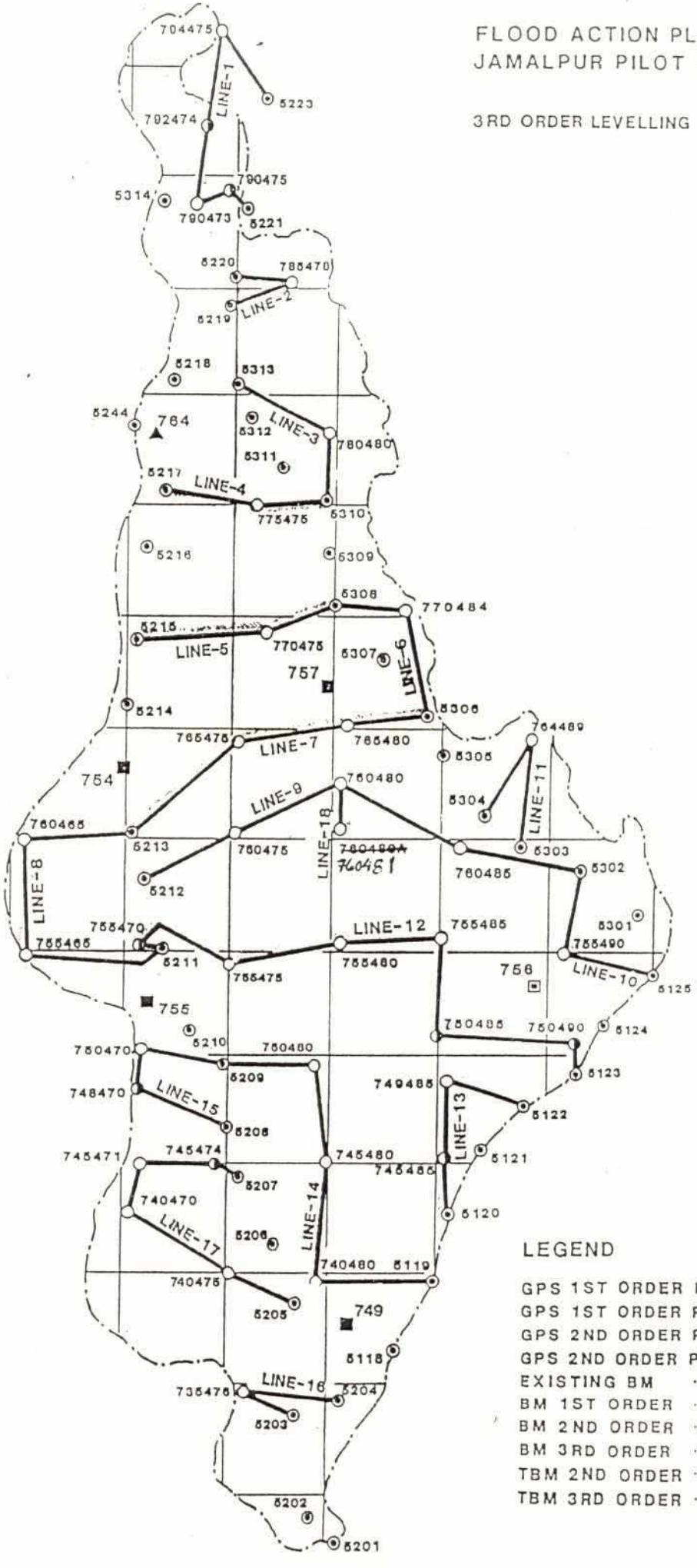
BANGLADESH
ACTION PLAN FOR FLOOD CONTROL
FAP-18



27

FLOOD ACTION PLAN-18
JAMALPUR PILOT AREA

3RD ORDER LEVELLING

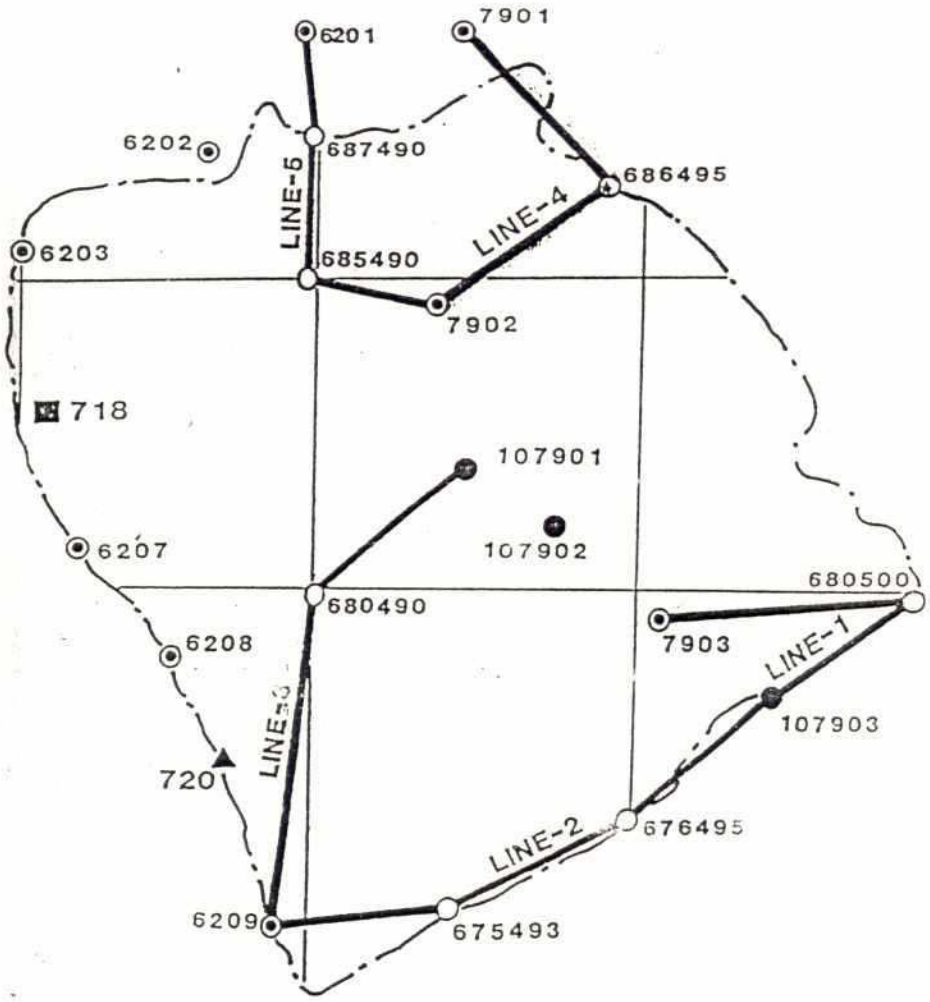


LEGEND

GPS 1ST ORDER POINT (OLD) .....
GPS 1ST ORDER POINP (NEW) .....
GPS 2ND ORDER POINT (OLD) .....
GPS 2ND ORDER POINT (NEW) .....
EXISTING BM .....
BM 1ST ORDER .....
BM 2ND ORDER .....
BM 3RD ORDER .....
TBM 2ND ORDER .....
TBM 3RD ORDER .....

FLOOD ACTION PLAN-18
TANGAIL PILOT AREA

3RD ORDER LEVELLING



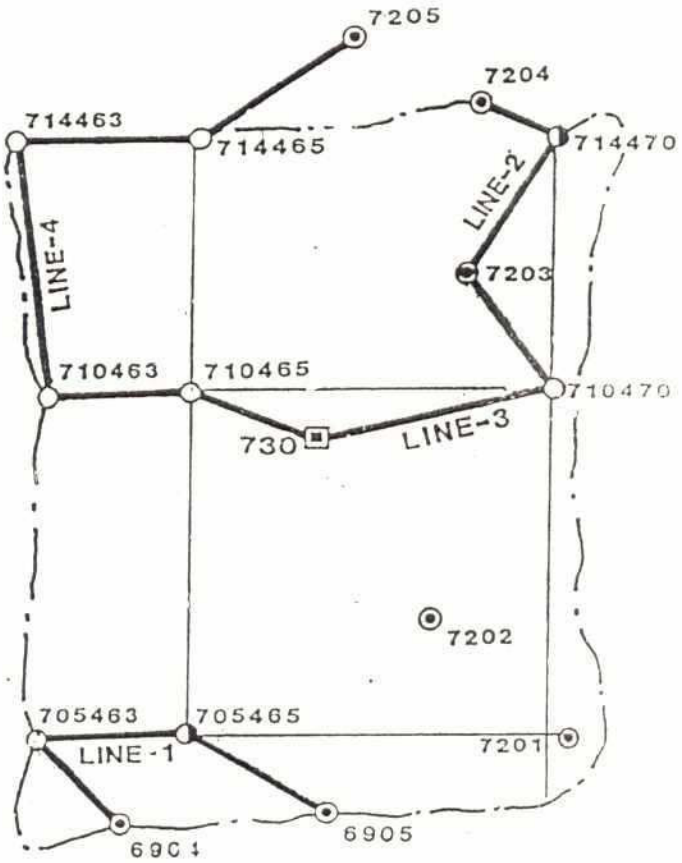
LEGEND

GPS 1ST ORDER POINT (OLD) ·····
GPS 1ST ORDER POINP (NEW) ·····
GPS 2ND ORDER POINT (OLD) ·····
GPS 2ND ORDER POINT (NEW) ·····
EXISTING BM .....
BM 1ST ORDER .....
BM 2ND ORDER .....
BM 3RD ORDER .....
TBM 2ND ORDER .....
TBM 3RD ORDER .....

C D

FLOOD ACTION PLAN
SIRAJGANJ PILOT AREA

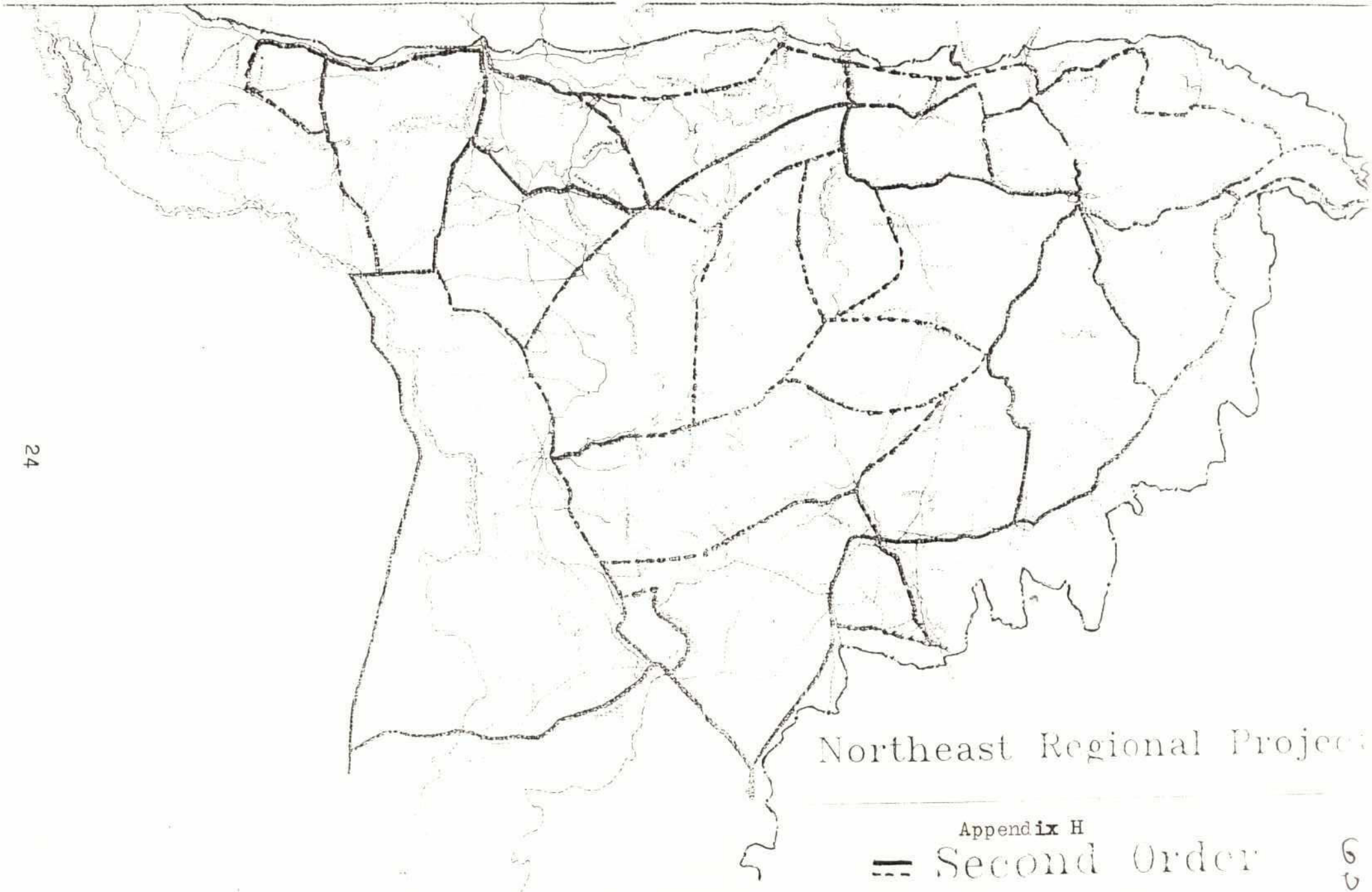
3RD ORDER LEVELLING
FAP-18



LEGEND

GPS 1ST ORDER POINT (OLD) ..... ⓐ
GPS 1ST ORDER POINT (NEW) ..... ▲
GPS 2ND ORDER POINT (OLD) ..... ▣
GPS 2ND ORDER POINT (NEW). ..... ▣
EXISTING BM ..... ●
BM 1ST ORDER ..... ⓑ
BM 2ND ORDER ..... ⊙
BM 3RD ORDER ..... ○
TBM 2ND ORDER ..... ◑
TBM 3RD ORDER ..... ◑

PRECISION LEVELLING DONE BY SOB
FOR FAP-6



Appendix H

Individual adjustments have been submitted to Survey of Bangladesh earlier.

4.3 AERIAL PHOTOGRAPHY

4.3.1 Technical

Aircraft: Aero Commander 690 A
Camera: 2 x Wild RC 10
Lens: Wild 15 UAG 1 and Wild 15 UAG 11

All photographies were flown in north-south direction. Near Indian border lines were flown follwing the main direction of the border.

Following requirements were fulfilled:

Longitudinal overlap	60% +/- 5%
Lateral overlap	25% +/- 10%

Appendix D: Index of Black and white aerial photographies.
E: Index of infra red colour aerial photographies.

4.3.2 Execution of Photographies

Aerial photographies were initially plananed at scale 1:30,000.

When photographies were started in December 1990 the scope of the works had been changed. It was considered "more adequate" that the aerial coverage should be at scale 1:50,000 for the north-central region of 22000 km^2 and at scale 1:20,000 for the Jamuna riverine area of 6000 km^2. Also infra red colour photography was not considered necessary for the whole area and it was reduced to cover pilot areas of Jamalpur, Sirajganj and Tangail only (1000 km^2).

All aerial photographies were completed by 24th of December, 1990.

4.3.3. AERIAL TRIANGULATION

Objectives

Aerial triangulation was used to extend ground control to be sufficient for rectification of pictures for mosaic production.

Ground control provides approximately one point for every 6 pictures. In rectification each picture must have 4 known points (xy-coordinates).

Method

Aerial triangulation was carried out by using the simultaneous bundle block adjustment method and program developed in the National Board of Survey of Finland.

Ground Control

Ground control was established using GPS as follows:

Area No of points	No of points
Jamalpur pilot area	11
Sirajganj pilot area	8
Tangail pilot area	8

GPS points used as horizontal ground control for the pilot areas were observed in connection for GPS-survey for the North-west and North-central regions. Network has been newly adjusted according to instructions of Survey of Bangladesh, also all old Survey of Bangladesh points.

In addition to heights of GPS points vertical ground control was provided by spot height levelling.

Priorto aerial photography, the GPS points, which were necessary for pilot areas aerial triangulation, were pre-marked.

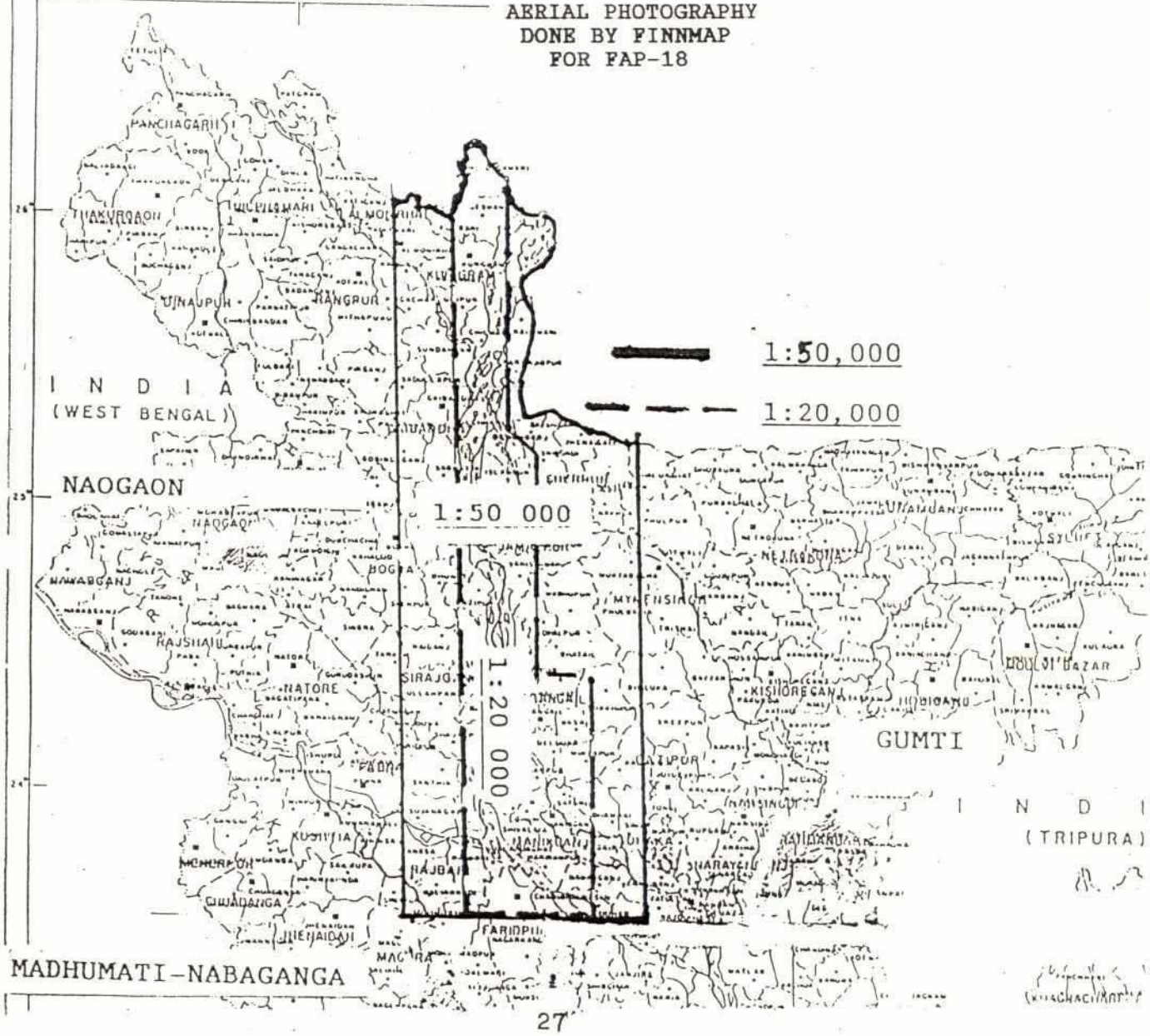
4.3.4. Aerial Photography

Aerial photography on the scale of 1:50,000 was used in Jamalpur pilot areas and on the scale of 1:20,000 for Sirajganj and Tangail pilot areas. Flight lines were in north-south direction.

Area	Runs used	Scale
Jamalpur pilot area	4	1:50,000
Tangail pilot area	5	1;20,000
Sirajganj pilot area	4	1:20,000

BANGLADESH
ACTION PLAN FOR FLOOD CONTROL Appendix I

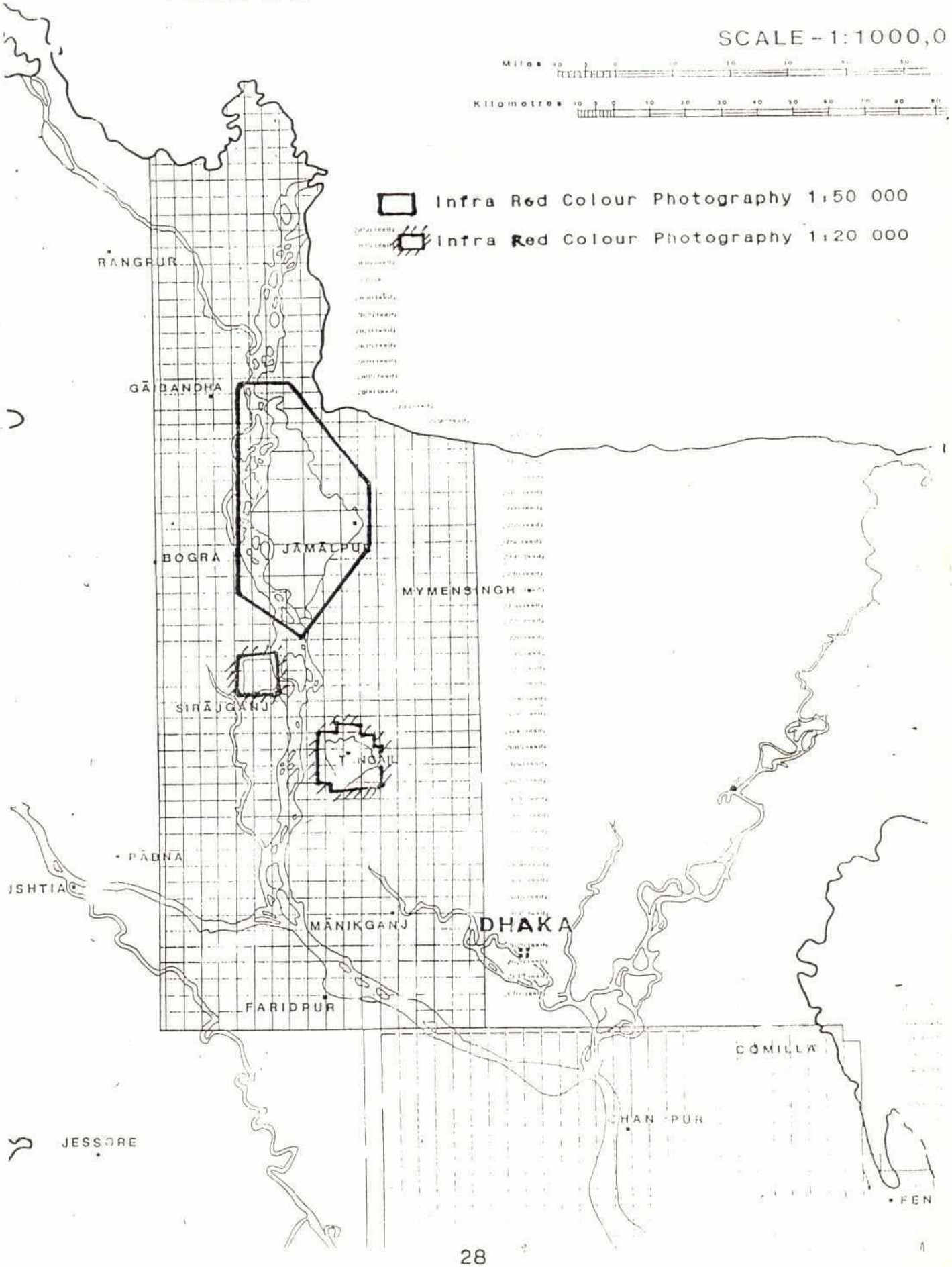
AERIAL PHOTOGRAPHY
DONE BY FINNMAP
FOR FAP-18



Appendix J

BANGLADESH
ACTION PLAN FOR FLOOD CONTROL

FAP-18, Infra-red photography taken by FINNMAP OY during 1990



4.3.5 CONTROLLED PHOTO MOSAICS WITH CONTOURS

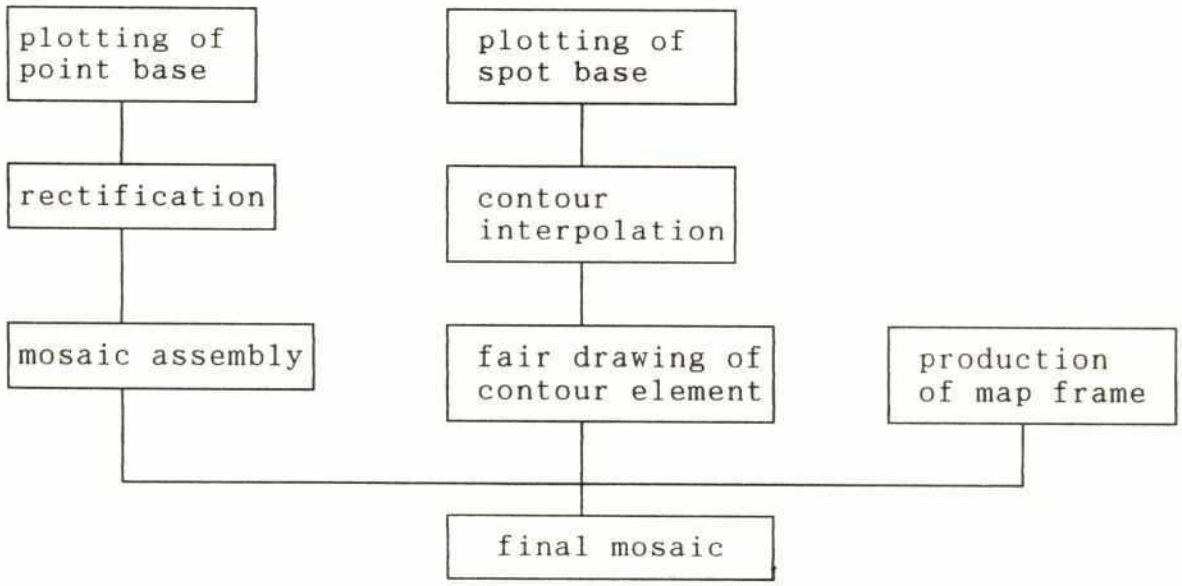
4.3.5.1 General

Production of controlled mosaic following aerial triangulation and computation of spot elevations involves following phases:

- plotting of point base for rectification
- rectification
- mosaic assembly
- plotting of spot base for contourinterpolation
- contour interpolation
- fair drawing of contour overlay
- combining mosaic assembly and contour overlay

4.3.5.2(a) Mosaic Production

Diagram for mosaic production:

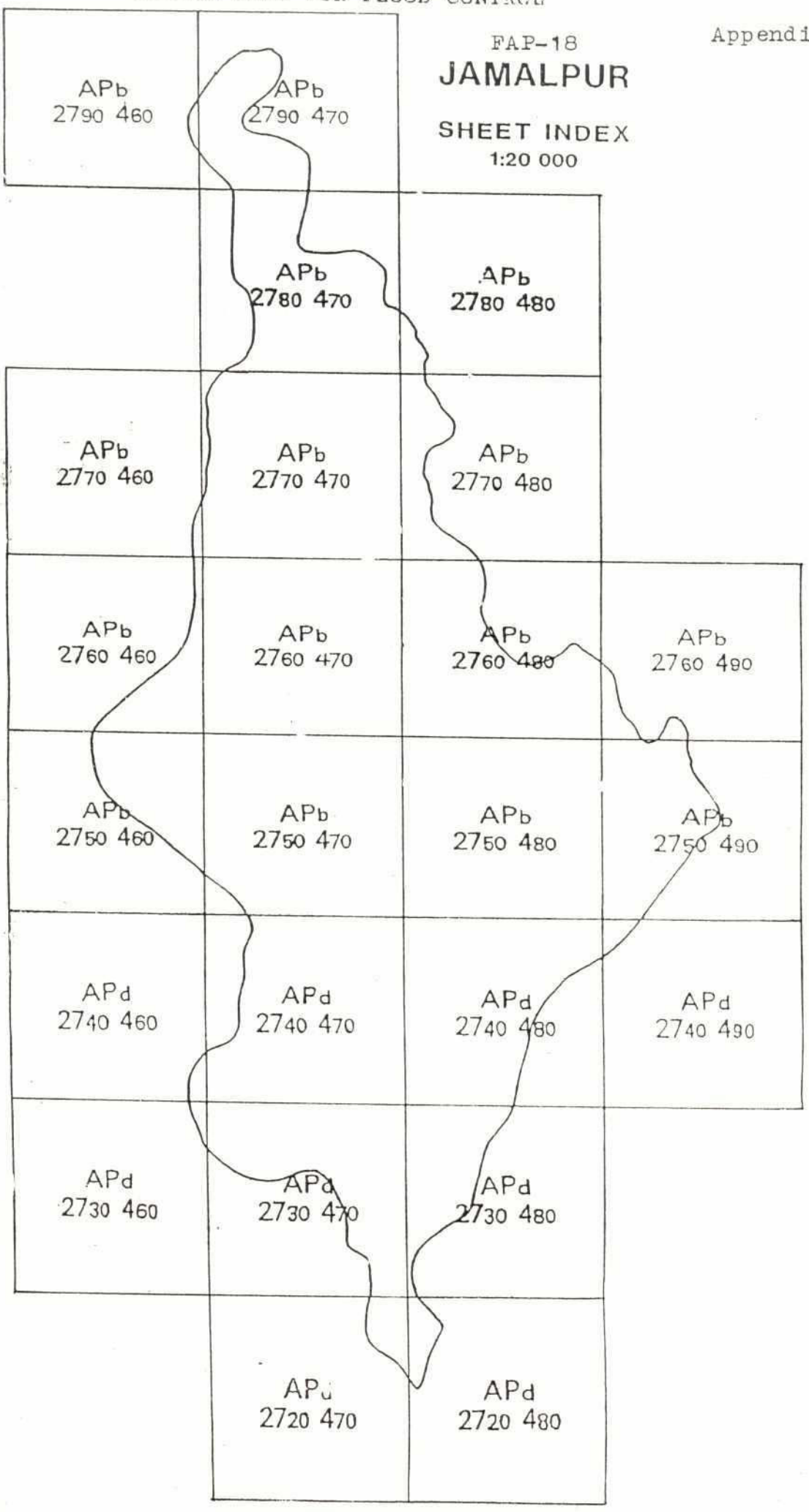


Plotting of point base was carried out using Wild TA10 plotting table with on-line connection with BC3 stereo-plotter.

Rectification was done using Wild E4 rectifier.

Spot base was plotted by transferring spot height locations from field copies and spot heights resulting from levelling adjustments on a transparent stable material.

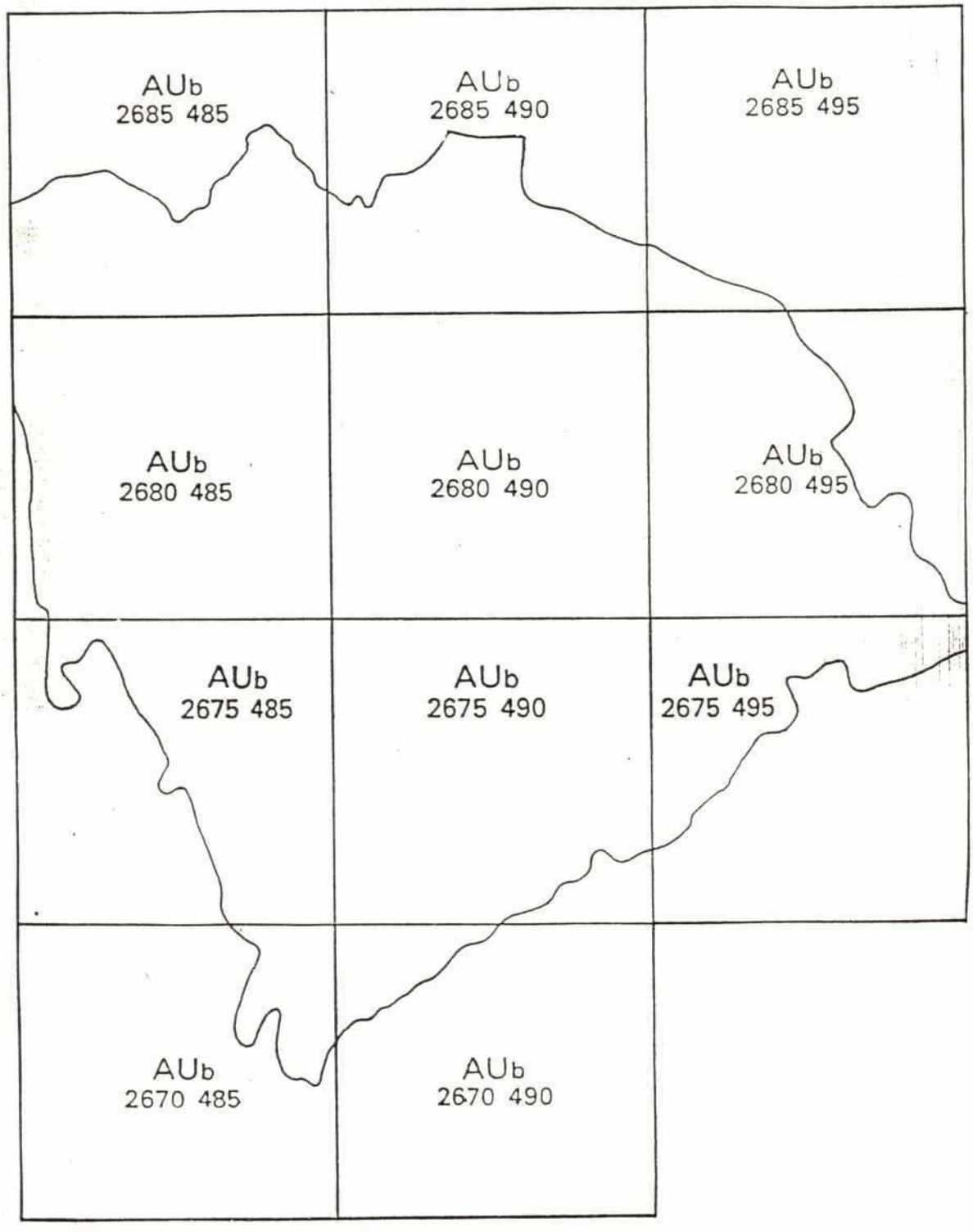
In manual contour interpolation rectified mosaics and stereoscopic picture-pairs were used.


FAP-18
JAMALPUR
SHEET INDEX
1:20 000
APb 2790 460
APb 2790 470
APb 2780 470
APb 2780 480
APb 2770 460
APb 2770 470
APb 2770 480
APb 2760 460
APb 2760 470
APb 2760 480
APb 2760 490
APb 2750 460
APb 2750 470
APb 2750 480
APb 2750 490
APd 2740 460
APd 2740 470
APd 2740 480
APd 2740 490
APd 2730 460
APd 2730 470
APd 2730 480
APd 2720 470
APd 2720 480

FAP-18

TANGAIL

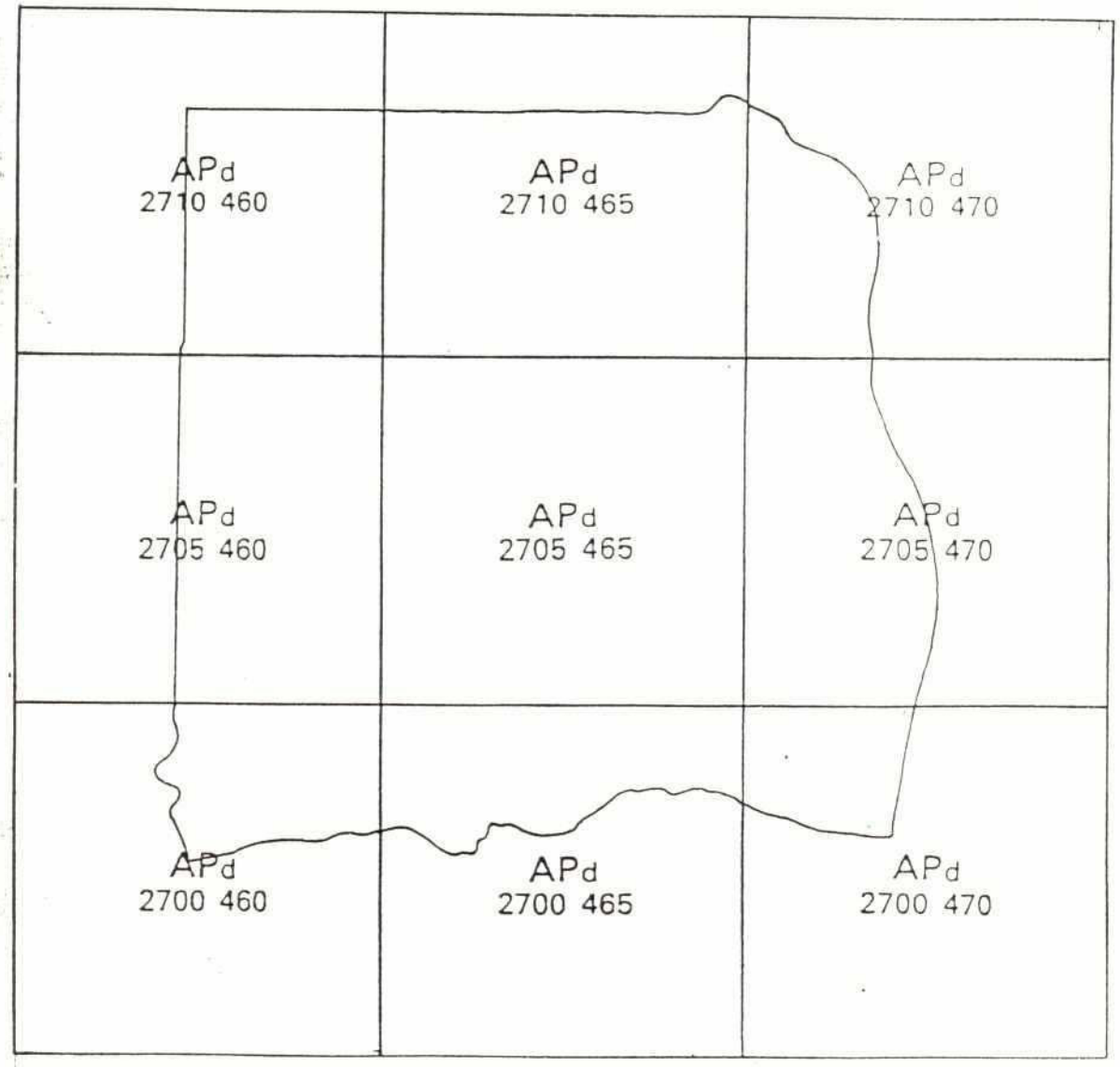
SHEET INDEX
1:10 000



FAP-18
FAP-18

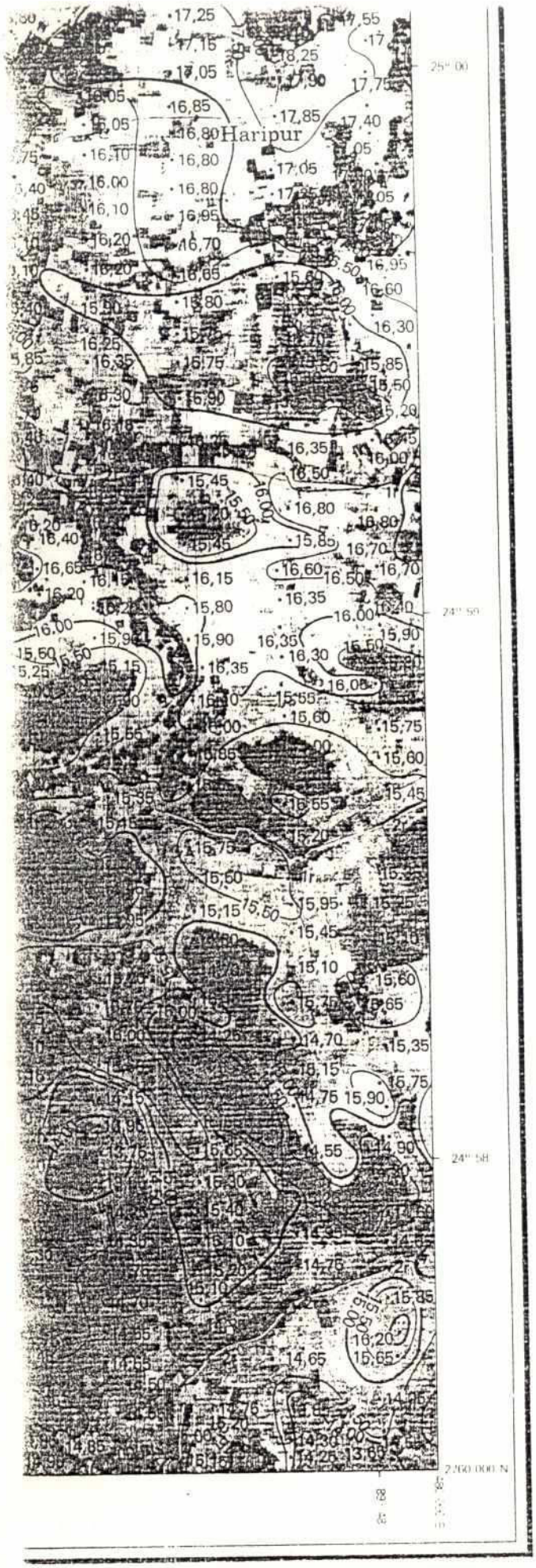
SIRAJGANJ

SHEET INDEX
1:10 000



4.3.5.2(b) PHOTO CONTOUR MAP OF FLOOD ACTION PLAN AREA

Flood Plan Co-ordination Organization Bangladesh Inland Water Transport Authority (BIWTA) New aerial photography on 1;50,000 scale for entire Jamuna area and on 1:20,000 scale for Pilot project areas of Jamalpur,Tangail and Sirajganj areas, GPS survey for FAP-3 & FAP-2 areas, 2nd order levelling including geometrical level crossing over the Jamuna,3rd order and spot height levelling in the pilot project areas, aerial triangulation,rectification of photos for preparation of photo-contour mosaic maps for the Pilot project areas were given to FINNMAP for execution under the "Mapping for Devlopment-1st phase-coastal area" under BIWTA. FINNMAP has completed the job.Indices showing different jobs done by FINNMAP for FAP are shown in the following pages. These photo maps are very useful for feasibility studies and design works for any type of development planning in the pilot project areas and the GPS points with co-ordinates and BM monuments with heights will be of benefit for future works.	Map name: Photo-map Type of map: Topographic Published date: 1992 Edition: 1st edition Survey method; Planimetric field control was provided with GPS observation.These were used in aerial triangulation done with new photography for Jamalpur, Sirajganj & Tangail area. Altimatric control was provided with 2nd order levelling. Rectification & enlargements were done with photo control points obtained from aerial triangulation. Contouring was done by interpolation with spirit levelled spot heights fixed on the ground & marked on the enlargements. Finally contours were superimposed over photo-mosaics. Coverage: Jamalpur,Tangail & Sirajganj pilot project areas. Printed by: BIWTA in cooperation with FINIDA. Source: FPCO Colour: Black and white Size: 80 by 60 cms Projection: Universal Transverse Mercator (UTM) Scales: Jamalpur-1:20,000,Sirajganj & Tangail-1:10,000 Contour interval:Jamalpur: 0.50 m Sirajganj & Tangail: 0.25 m. Procurement: Only record set is available in FPCO. Application for consultation only on SOB's prescribed proforma to be given to Chief Engineer, FPCO. Cost: To be fixed by CE,FPCO.



ACTION PLAN FOR FLOOD CONTROL
FAP-18 Appendix N

Index to adjoining sheets

APb 2770 460	APb 2770 470	APb 2770 480
APb 2760 460	APb 2760 470	APb 2760 480
APb 2750 460	APb 2750 470	APb 2750 480

Administrative index

JAMALPUR DISTRICT

PROJECTION AND BASIC DATA

Projection : Universal Transverse Mercator (U.T.M.)
Spheroid : Everest
Horizontal datum: Bangladesh Geodetic Net
Vertical datum : Bangladesh Datum

Photo Map compiled from aerial photographs taken 1990 by FINNMAP Oy
Field identification and compilation in 1991
Magnetic declination is about 42' West in 1967

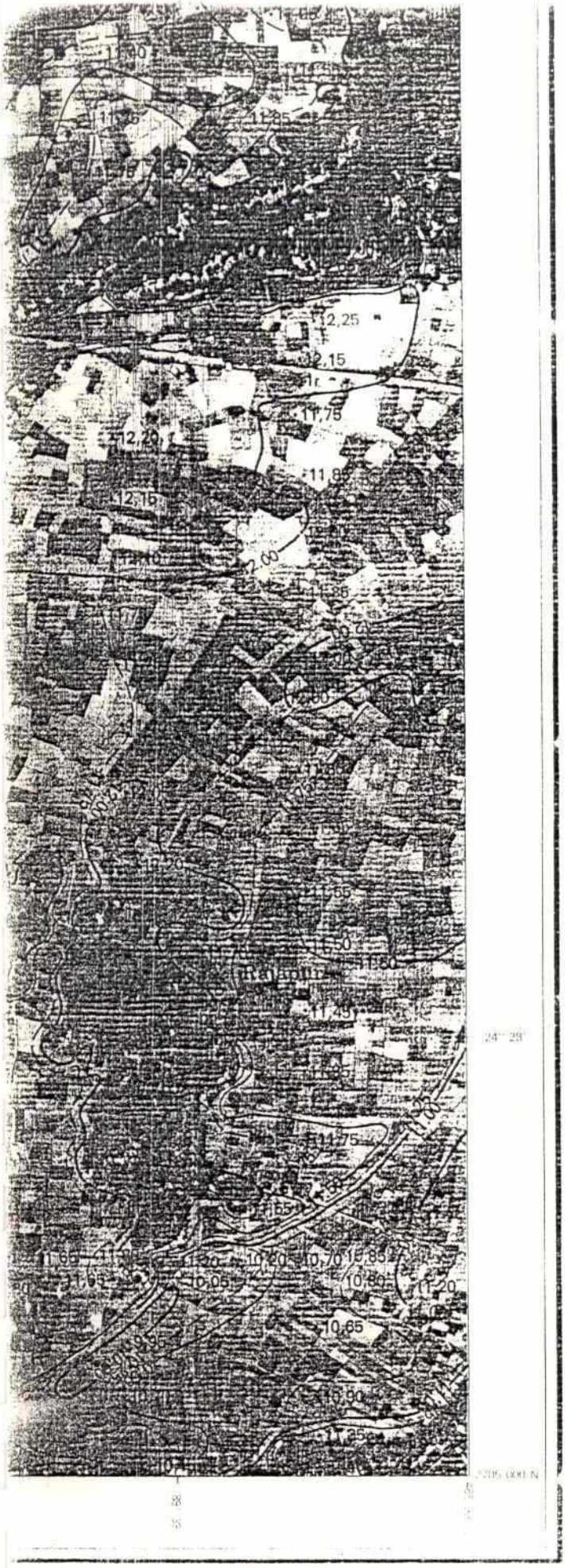
PRODUCTION

Photo Map produced by Bangladesh Inland Water Transport Authority in co-operation with FINNIDA, Finland

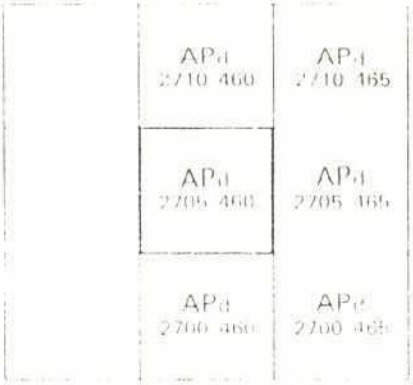
1ST EDITION 1992

SERIES 1:20 000
SHEET ..... APb 2760 470
EDITION .... 1st Edition

ACTION PLAN FOR FLOOD CONTROL
FAP-18 Appendix O



Index to adjoining sheets



Administrative index

PROJECTION AND BASIC DATA

Projection	:	Universal Transverse Mercator (U.T.M.)
Spheroid	:	Everest
Horizontal datum	:	Bangladesh Geodetic Net
Vertical datum		Bangladesh Datum

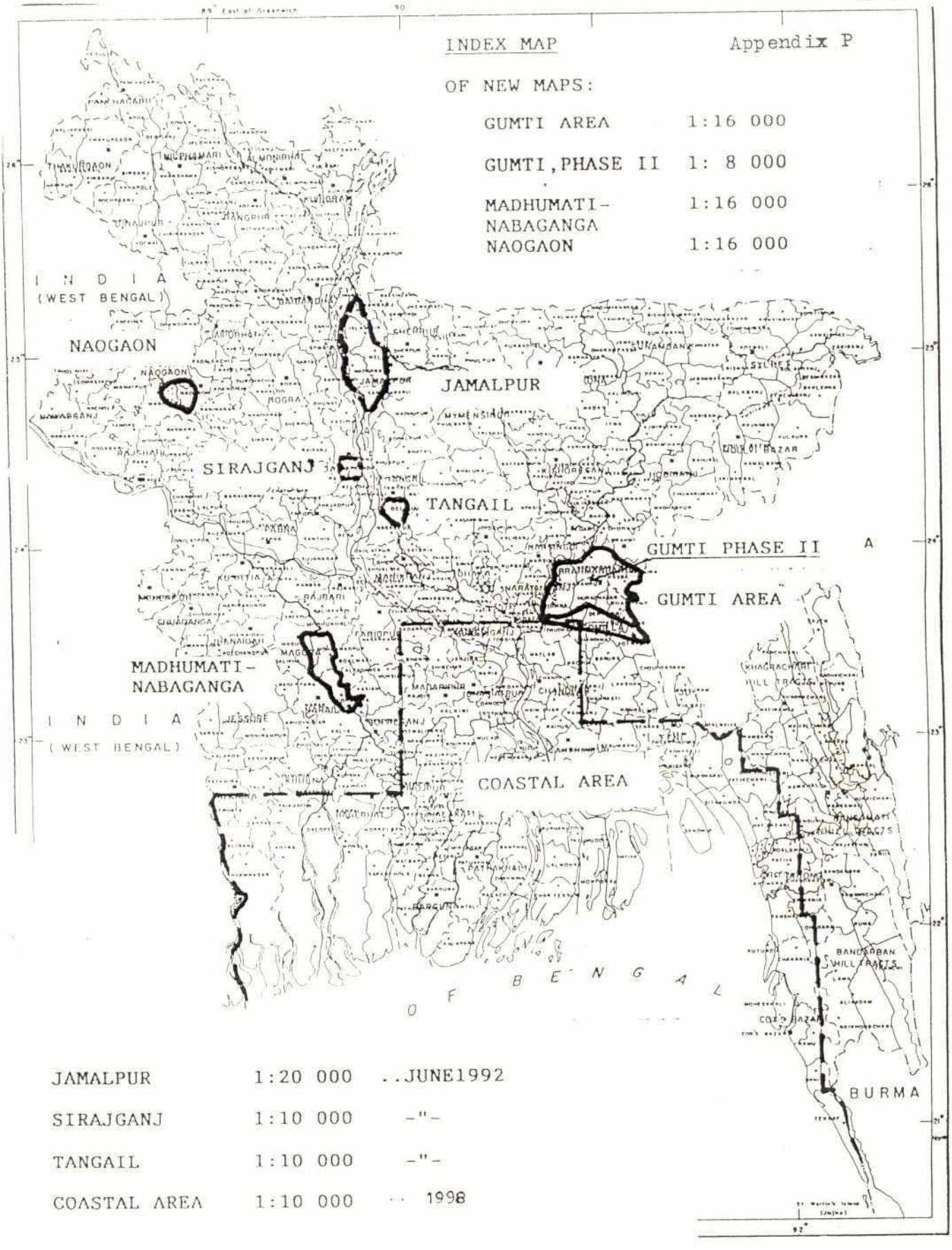
Photo Map compiled from aerial photographs taken 1990 by FINNMAP Oy
Field identification and compilation in 1991
Magnetic declination is about 47' West in 1967

PRODUCTION

Photo Map produced by Bangladesh Inland Water Transport Authority
in co-operation with FINNIDA, Finland

1ST EDITION 1992

SERIES	1:10 000
SHEET	APd 2705-460
EDITION	1st Edition



JAMALPUR	1:20 000	..JUNE1992
SIRAJGANJ	1:10 000	-"-
TANGAIL	1:10 000	-"-
COASTAL AREA	1:10 000	.. 1998

On final combination copies contours were superimposed in black over the controlled mosaic.

Mosaics were printed on high resolution photographic paper.

Appendix F: Jamalpur sheet index 1:20,000
G: Sirajganj sheet index 1:10,000
H: Tangail sheet index 1:10,000

4.4. CHECKING OF WORKS

4.4.1 Technical Checking by National Board of Survey, Finland.

National Board of Survey of Finland has carried out checking of following phases and approved them:

- aerial photography
- GPS-survey
- aerial triangulation
- second order levelling
- river crossing levelling
- third order levelling
- spot height levelling
- contour interpolation
- final mosaics

4.4.2 Technical Checking by Survey of Bangladesh

Survey of Bangladesh has carried out checking of following phases and approved them:

- second order levelling
- river crossing levelling
- contour interpolation
- final mosaics

After completion the checking of second order and river crossing levelling a clarification meeting was held in Surveyof Bangladesh on the 28th of July 1993. In this meeting Survey of Bangladesh approved all second order levellings including rivr crossings.

4.5 FINAL PRODUCTS

- Ground control surveys
- GPS survey - 3 sets of point description cards with co-ordinators
- Second order levelling - 3 sets of bench mark description cards with heights
- Third order levelling - 3 sets of bench mark description cards with heights

- Aerial Photographies
- Black and white photography
  original films
  3 sets of contact prints
- Infra red colour photography
  original films
  1 set of contact prints
- Controlled mosaics
  mosaic negatives
  1 set of controlled mosaics
  6 sets of additional copies copies were printed on request

4.6. **100 rectified photo mosaics on scale 1:10000 prepared as per request of FPCO from 1:30,000 aerial photos of 1990 covering north Noakhali area were deposited to Survey of Bangladesh.**

5. **Supply of SPOT Image maps by SPOT IMAGE, FRANCE for Flood Action Plan under FAP-18**

Programming for acquisition of SPOT Images, acquisition, processing and geographical rectification of images were done by SPOT IMAGES, France. 1:50,000 scale topographyical maps covering the entire Flood Action Plan Area taken from Survey of Bangladesh were supplied to SPOT IMAGE, France for geographical correction of image details under an arrangement between the Government of the People's Republic of Bangladesh and the France Government. These were taken back after completion of the rectification work.

SPOT IMAGE, France supplied 1:50,000 scale image maps (multispectral) for the dry season of 1989 covering the entire FAP area and for both dry and wet seasons of 1990 through the dry season of 1995. The specifications of these image maps and their coverage will be seen in the indices enclosed herewith.

6. **Indexes of Topo data**

Comprehsnsive Map indexes from A through J" showing the works done under FAP-18/works done by FINNMAP, Spot Imageries of different years supplied by France and various topographic data which are available in different organizations are enclosed in these reports along with their detailed spcifications special features, procurement procedures and costs involved. These will help locate the sources of specific data needed by experts.

SPOT IMAGE MAPS (1:50,000)

SPOT IMAGE MAPS Flood Plan Co-ordination Organization (FPCO). FPCO collected 1;50,000 SPOT IMAGE maps covering entire Flood Action plan areas for the dry season of 1989 and only the Jamuna river areas including its confluence with the Padma for both dry and wet seasons for 1990 through 1994. Arrangements have also been made for procurement of similar image maps for the dry season of 1995. The geographical position of image details were corrected using 1;50,000 scale SOB maps. Important site names were also taken from these maps. These Spot maps proved very useful in the regional FAP studies. SPOT Maps are shown in the attached indices.	
	Map name: SPOT IMAGE MAP Type of map: Satellite Imagery
	Published dates: 1990-1995
	Edition : 1990-1995
	Methodology: Digital processing of Multispectral SPOT Images with topo-names selected from 1;50,000 scale Survey of Bangladesh maps.
	Coverage: Entire Flood Action plan Areas for 1989 and covering the Jamuna river with confluence of the Padma from 1990 to 1995.
	Source: FPCO
	Size: 64 by 81 cms.
	Colour: Multispectral
	Projection: Transverse Mercator projection
	Scale: 1:50,000
	Procurement; For FAP works formal request to Chief Engineer,FPCO
	Cost: Tk 5,000/- only as storage charge for any number of Spot maps per dry/wet season.

c:HAK-1:tc

SPOTMap

FAP-18

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

Flood Plan Co-Ordination Organization

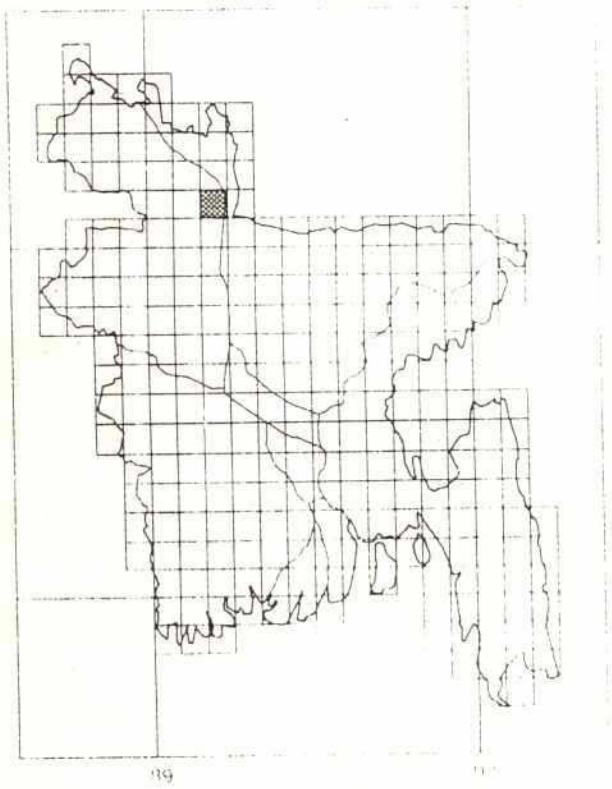
Sheet **78** G/11

Scale 1:50,000 (1 cm = 500 m)

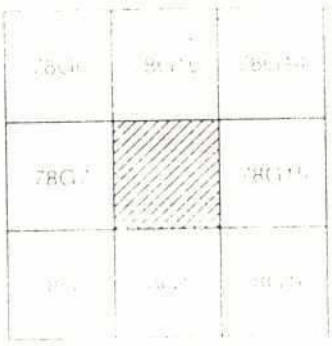
2500 m 1000 m 0 2.5 km

SPOTMap produced by digital processing of multispectral SPOT images

Location diagram



Index to adjoining sheets



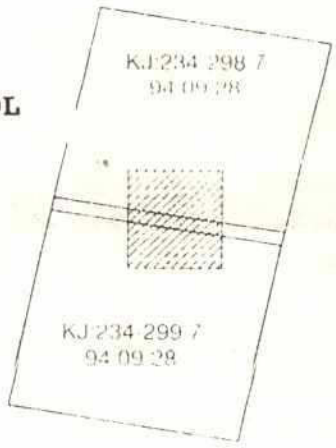
Appendix Q 84

SPOT scenes index

AUTUMN 1994

BANGLADESH
ACTION PLAN FOR FLOOD CONTROL

FAP-18



Transverse Mercator Projection
5000 meter grid (last three digits omitted)
Everest spheroid
Central meridian: 90° East Greenwich
Latitude of origin: 0° (the equator)
False Northing: 0 meters
False Easting: 500,000 meters
Scale factor at the central meridian: 0.9998

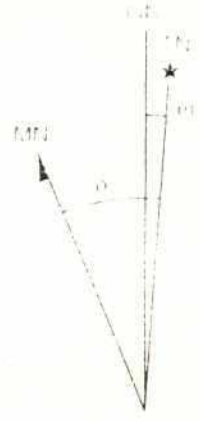
Declination

for 1985
at sheet center

Declination
0° 30'

Annual change
0° 1' W

Grid Convergence
0° 0'



Level 2B processing by Spot Image
Registration with image maps edition 1990 ensured by using common Ground Control Points
Digital mosaicking, edge enhancement, contrast stretching by Spot Image
Toponyms selection by IGN Espace from AMS Series U502 Ed.1 and 1:50,000 topomap of Survey of Bangladesh
Layout processing by Spot Image
Photographic processing by Spot Image

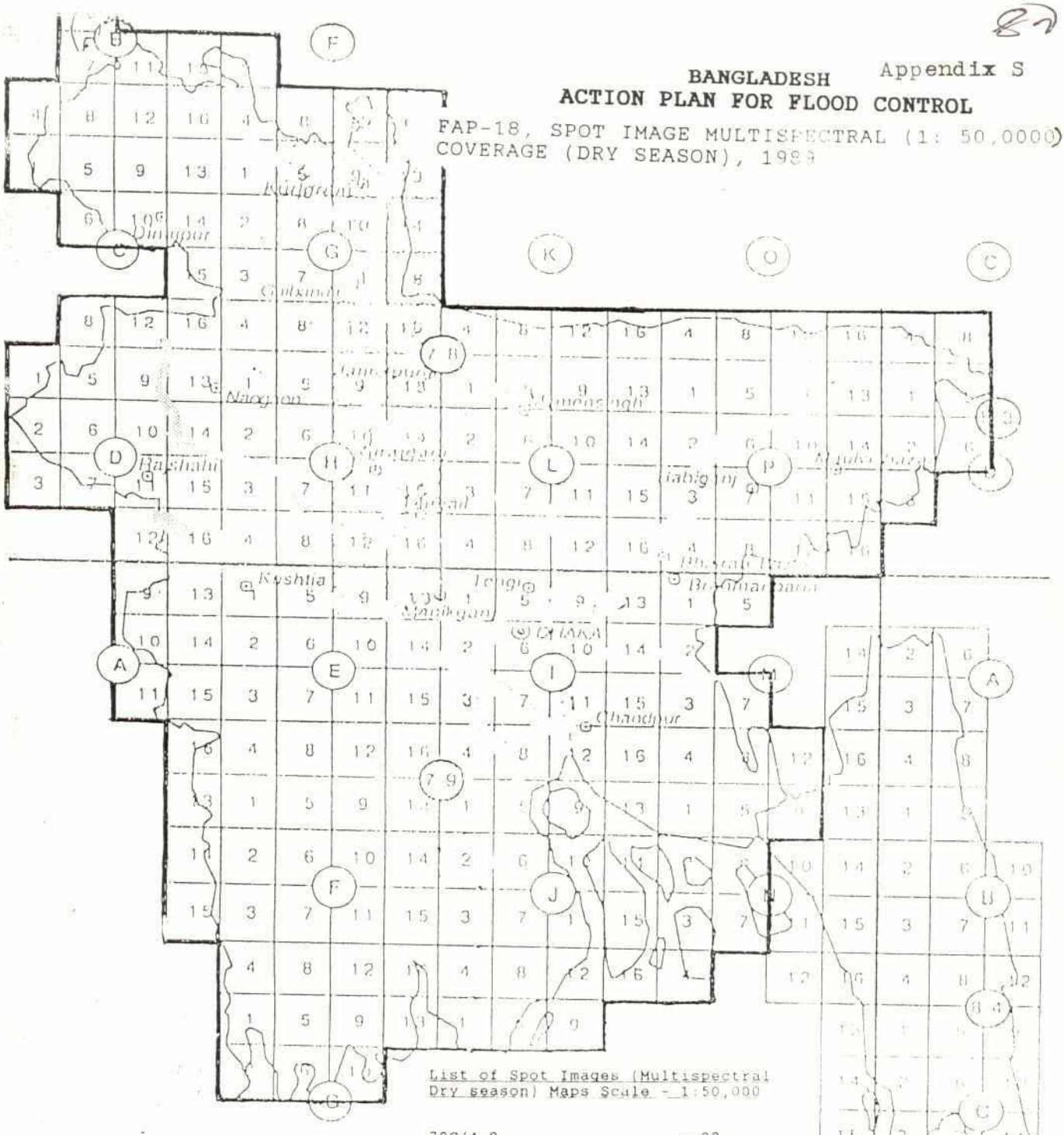
Edition 1994

SPOTMap for : GOVT. OF THE PEOPLE'S REPUBLIC OF BANGLADESH
Ministry of Irrigation, Water Development and Flood Control,
Flood Plan Co-Ordination Organization
Financing Agency : République Française.
Caisse Française de Développement

SPOT IMAGE

BANGLADESH
ACTION PLAN FOR FLOOD CONTROL

FAP-18, SPOT IMAGE MULTISPECTRAL (1: 50,0000) COVERAGE (DRY SEASON), 1989

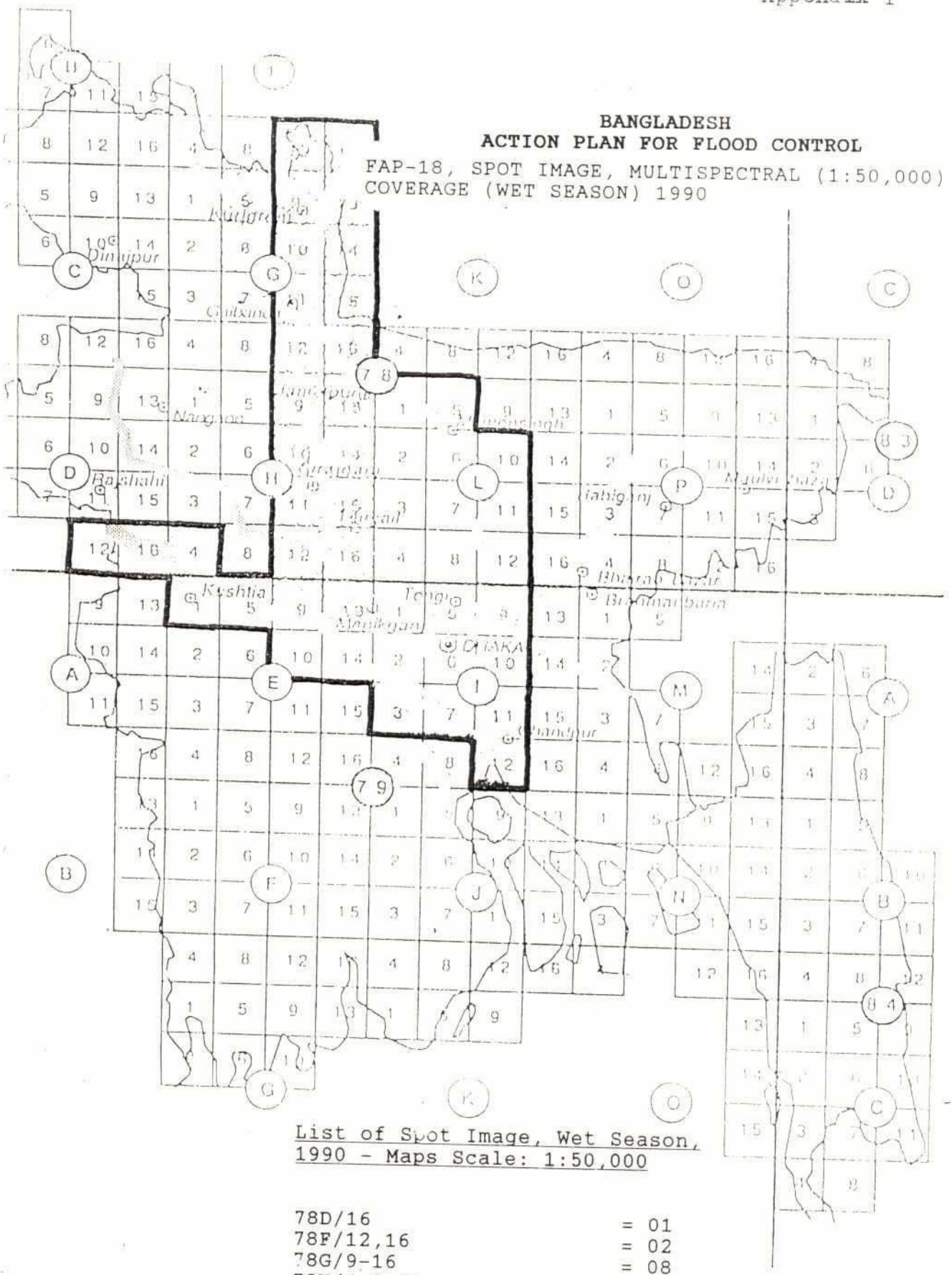


List of Spot Images (Multispectral Dry season) Maps Scale - 1:50,000

79C/4,8	= 02
79K/1,5,9	= 03
79B/13-15	= 03
78O/4,8,12,16	= 04
78K/4,8,12,16	= 04
79D/1,2,3,5,6	= 05
78P/3,4,8,12,16	= 05
79A/9-11,13-16	= 07
79G/1,2,5,6,9,10,13	= 07
79N/1-7,9	= 08
79M/1-5,7,8,12	= 08
78B/4,6,7,8,11,12,15,16	= 08
78C/1,5,6,8-10,12-16	= 11
78D/1-3,5-7,9-16	= 14
78(G,H,L,P)/1-16	= 64
79(E,F,I,J)/1-16	= 64
	217 sheets

BANGLADESH
ACTION PLAN FOR FLOOD CONTROL

FAP-18, SPOT IMAGE, MULTISPECTRAL (1:50,000)
COVERAGE (WET SEASON) 1990

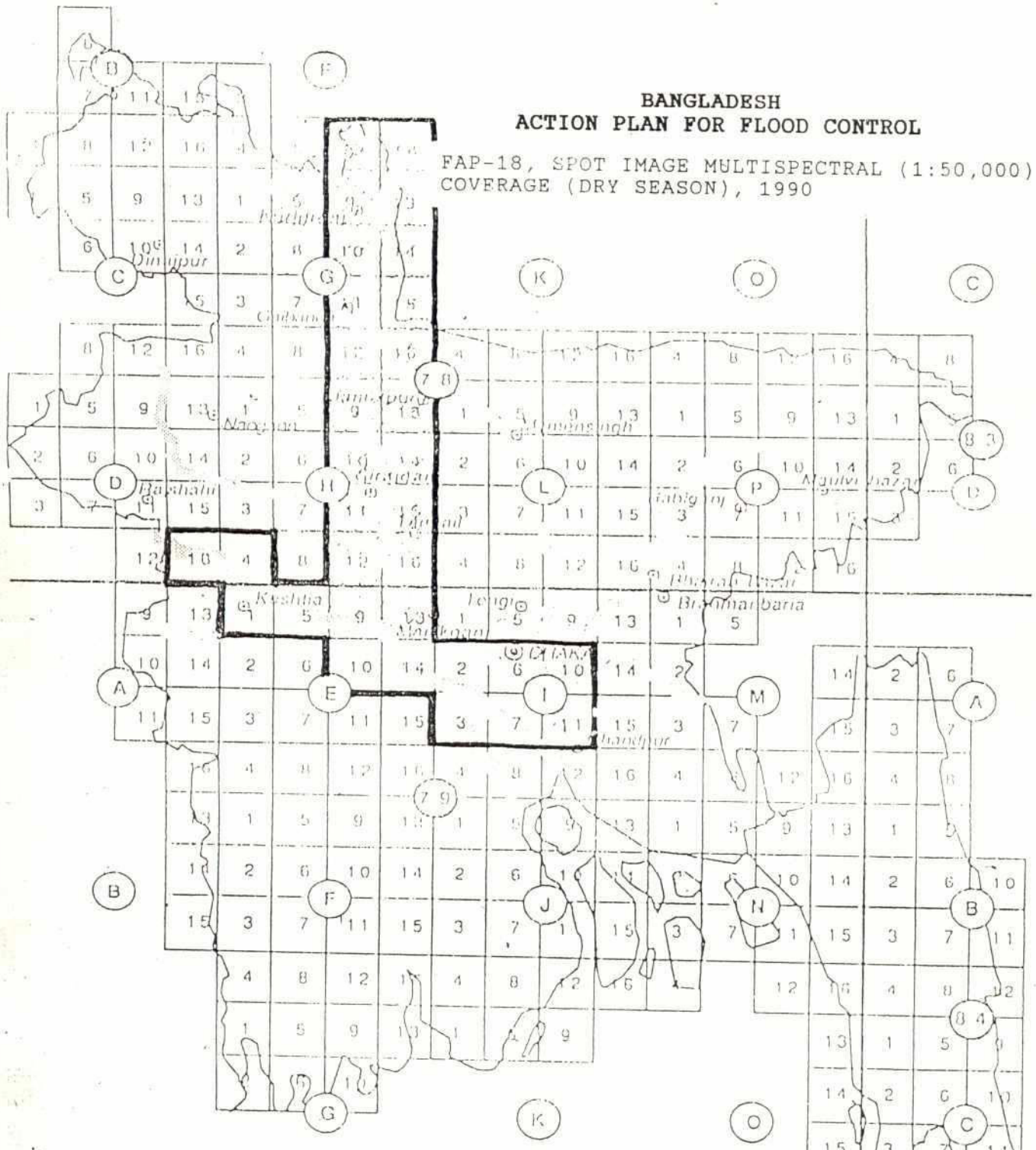


List of Spot Image, Wet Season, 1990 - Maps Scale: 1:50,000

78D/16	= 01
78F/12,16	= 02
78G/9-16	= 08
78H/4,9-16	= 08
79E/1,5,9,10,13,14	= 06
79I/1-3,5-7,9-12	= 10
78L/1-8,10-12	= 11
	47 Nos.

BANGLADESH
ACTION PLAN FOR FLOOD CONTROL

FAP-18, SPOT IMAGE MULTISPECTRAL (1:50,000) COVERAGE (DRY SEASON), 1990

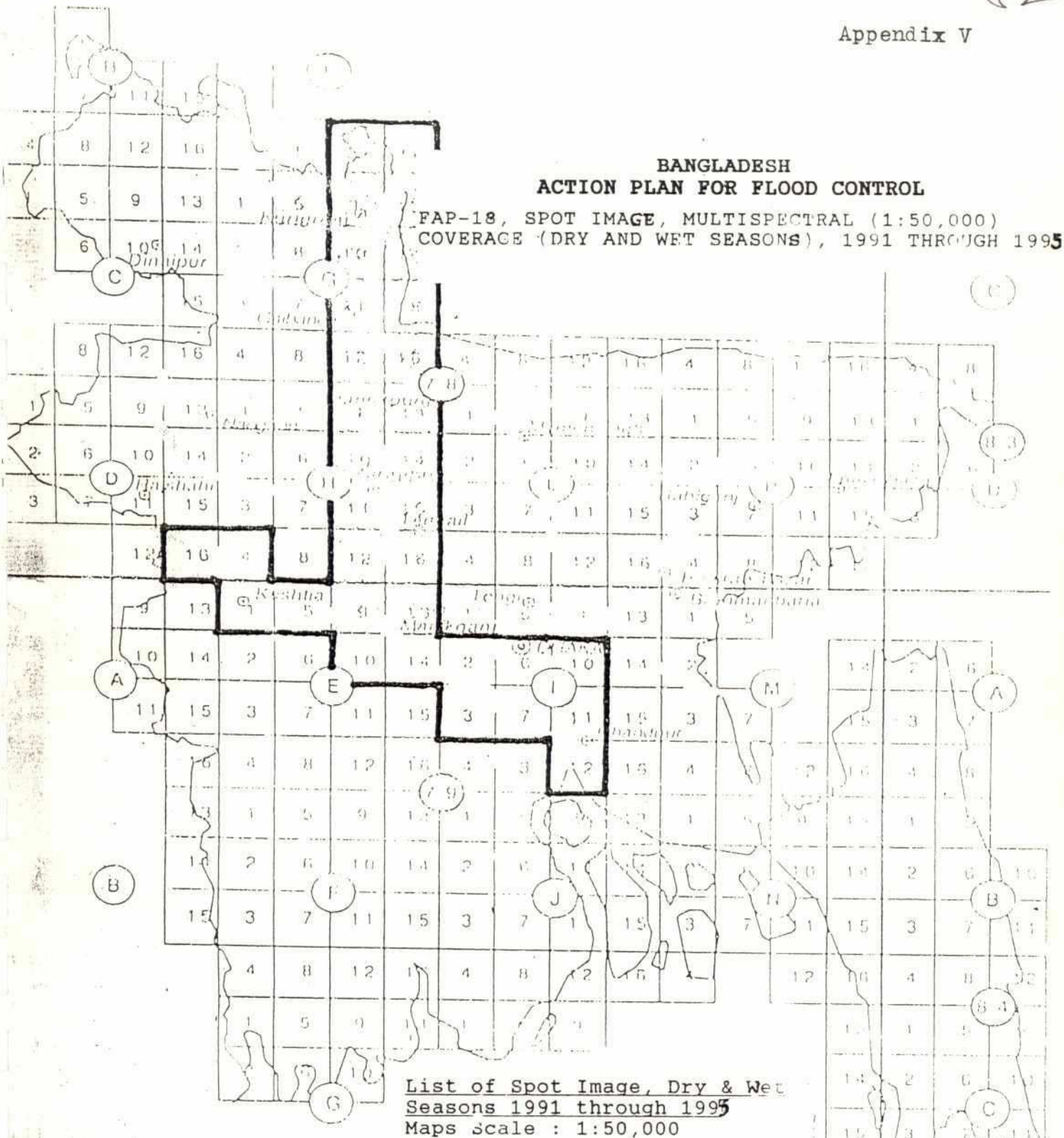


<u>List of Spot Image Dry Season, 1990 Maps Scale : 1:50,000</u>

78D/16	= 01
78F/12,16	= 02
78G/9-16	= 08
78H/4,9-16	= 09
79E/1,5,9,10,13,14	= 06
79I/2,3,6,7,10,11	= 06
	32 Nos.

BANGLADESH
ACTION PLAN FOR FLOOD CONTROL

FAP-18, SPOT IMAGE, MULTISPECTRAL (1:50,000)
COVERAGE (DRY AND WET SEASONS), 1991 THROUGH 1995



List of Spot Image, Dry & Wet Seasons 1991 through 1995
Maps Scale : 1:50,000

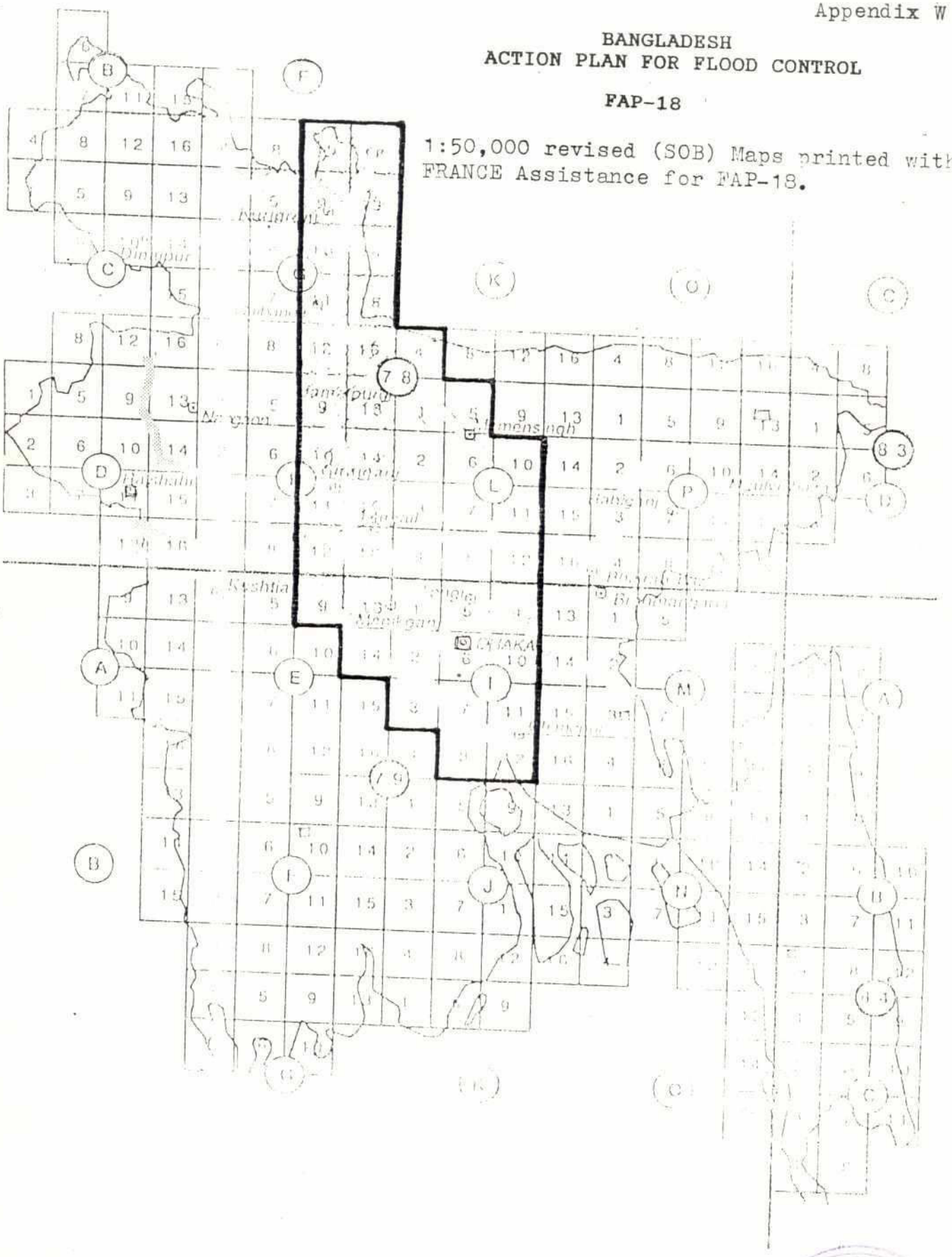
78D/16	= 01
78F/12,16	= 02
78G/9-16	= 08
78H/4,9-16	= 09
79E/1,519,10,13,14	= 06
79I/2,3,6,7,10-12	= 07
	33 Nos.

Appendix W

BANGLADESH
ACTION PLAN FOR FLOOD CONTROL

FAP-18

1:50,000 revised (SOB) Maps printed with FRANCE Assistance for FAP-18.



7. Implications of FAP-18 Study

oo Assessment of the actual need of Topo-data for different FAP-study Components, co-ordination with various Government, semi-government and expatriate agencies involved in Topo-data production, planning for data availability, monitoring execution and production of survey and mapping data, procurement and supply of old and new aerial photographs of various scale, old and new large scale contour maps, large scales photo contour maps, recent edition and revised medium scale topographic maps and small scale maps, precision level BM data, GPS data, spot satellite imageries for every year from 1989 to 1994 are significant contributions of FAP-18 towards completion of all FAP study projects.

oo After 1983, no fresh aerial photography covering Flood Action Plan areas was available for multidisciplinary FAP studies. Fresh aerial photography of the Jamuna areas was vitally needed for FAP. The Jamuna area was photographed on 1:50,000 scale (22,000 sq. kms) and on 1:20,000 scale (10,000 sq.km) both black and white. Infra-red photography (1:50,000) for Jamalpur (800 sq. kms), for Tangail (100 sq. kms) and for Sirajganj (100 sq. kms) was taken. These constitute strong data base for present and future water resource management and development activities and also for mapping by SOB.

oo One set of Spot Imagery for dry season of 1989 and for each dry and wet seasons of every year from 1990 through 1995 will help SOB to update their small scale departmental maps.

oo 10 Nos. of precision level machines from CIDA and 5 Nos. of precision level machines from National Board of Survey, Finland with requisite number of level staff arranged for levelling works of FAP-6 and handed over to SOB on donation will immensely help the department in their future work.

oo Second order control level net (2468 kms) established with BM monumentations on and beyond both banks of the Jamuna also with connections to all water gauge reference BMs of BWDB in that region will serve as a permanent asset for water management works and for all other development projects as also for use by SOB.

oo Existing level BMs of SOB on both sides of the Jamuna were found not in agreement among themselves while providing precision level BMs by FINNMAP on both banks of

the Jamuna for FAP works. Therefore, FINNMAP was asked to check the datum of both banks though geometrical level crossing over the Jamuna. FINNMAP found a datum difference of about 20 cms between the West and the East Bank. This was intimated to Surveyor General of Bangladesh. SOB then checked the datum difference and found that there existed a datum difference as found by FINNMAP who adjusted BM heights of both banks taking the west bank datum as correct. This is a significant work done under FAP-18 as FAP activities as also other works of water resources managements are required to be based on a single datum.

oo Second order precision control levelling (2260 kms) was also done for FAP-6 areas with connections to all water gauge reference BMs of BWDB (77 Nos.). Some of these BMs were connected with FINNMAPs BMs. All these precision levelling works with monumentation of BMs will serve as a permanent asset for FAP, SOB and for national development projects. SOB will now be able to declare a single datum for the whole country after FINNMAP's levelling works in the entire coastal area are checked by them (SOB). They will also be able to connect this datum with the new MSL now determined by them with technical assistance from JICA.

oo For large scale survey and mapping a resonable density of GPS control points are necessary. GPS points established in the NC and NW region with monumentation will serve as a permanent asset for SOB, BWDB and for all Development projects. These can be connected by SOB with the GPS stations established by JICA for the department.

oo The Mapping Cell of FAP-18 imported a resonable number of all types of modern survey, photogrammetric and printing machines and arranged training of staff of BWDB by the manufacturers of these machines. This will enable BWDB to be self-depended for revising old maps of BWDB covering priority areas and/or prepare fresh large scale contour maps for Water Resource Management of the country and with more experience can cater to the need of large scale contour maps of other developing agencies.

oo A new building in the Hydrology Complex of BWDB in Green Road is under construction to accomodate the machines and manpower of the Mapping Cell. This is going to be a significant achievement of FAP-18 as a step for institutional development.

oo The inventory of topographic data used for FAP studies and the indexes showing the availability of various types of topo data and Maps in different organizations with details of their specifications and procurement procedure prepared in FPCO under FAP-18 and enclosed in this reports will help experts (expatriate or local) engaged under development projects to locate them in their actual source without wastage of valuable time.

Chapter B

SURVEY OF BANGLADESH

Survey of Bangladesh is the authoritative national organization for topographic survey and mapping of the country. It provides and maintains geodetic control points and precision level Bench Marks necessary for all survey and mapping works. Determination of up-to-date mean sea level is also the responsibility of the department. It is also the custodian of all black and white aerial photography of the country. Key sheets showing flight lines and photo numbers of all aerial photography taken on various scales and on different dates are maintained by the department. Indentors need to consult these key sheets for specific aerial photographs. All indents for aerial photos, photo-mosaics, geodetic and level control data, geographical and topographical maps are to be made on prescribed application forms available in the department.

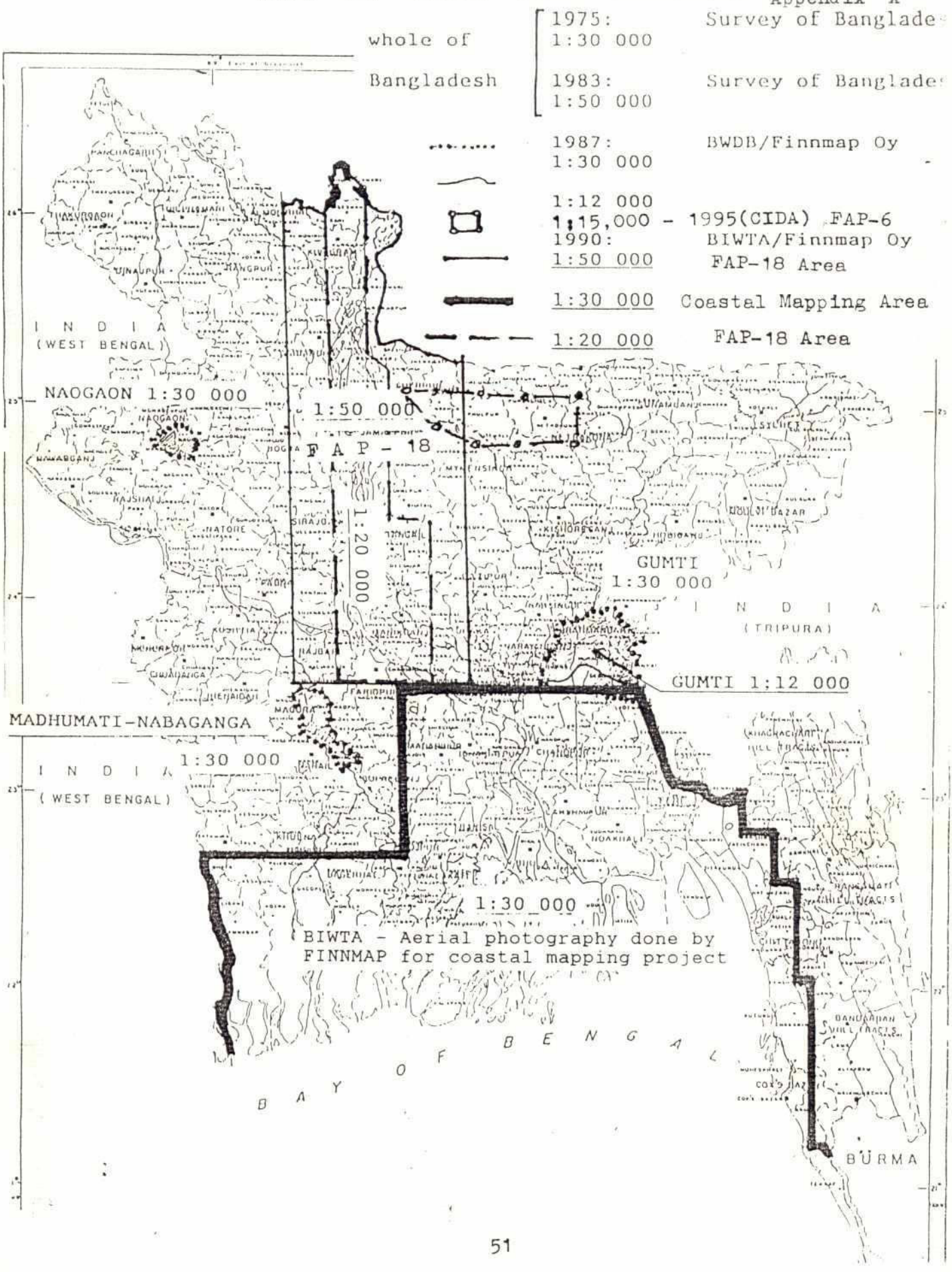
Users of Survey of Bangladesh maps are reminded that it is an offence under the copyright Act to make and issue any copy or copies of the map or any part of the map, with or without alternations and additions, unless the prior written permission of the Surveyor General of Bangladesh has been obtained.

The department produces the following maps:

1. Bangladesh Map on scale 1:1000000 (in English)
2. Bangladesh Map on scale 1:000000 (showing communications)
3. Bangladesh Map on scale 1 inch to 16 miles (showing Ancient Monuments)
4. Bangladesh Map on scale 1 inch to 16 miles (showing police stations)
5. Bangladesh Map on scale 1 inch to 10 miles (both Bengali and English version)
6. Bangladesh Map on scale 1 inch to 32 miles (both Bengali and English version)
7. Guide Maps on scale 1:20,000 (big cities) and 1:15,000 (other towns)
8. District Maps on scale 1:250,000 and 1:125,000
9. BAF chart on scale 1:1000000 in English
10. Topographical maps on scales:
    (a) 1:1000000 (English) - International series
    (b) 1:250,000 (English) "
    (c) 1:50,000 (English) "
    (d) 1:25,000 (English) "
    (e) 1:500,000 (English) "
11. GPS coverage provided by JICA for Survey of Bangladesh. Special features and other particulars of these maps will be seen in the pages that follow.

Index for recent aerial photography

Appendix X



List of Old Aerial photography taken within present boundary of Bangladesh

No	Name	Scale	Date
1	Indo-Pakistan boundary	2.5 inches to a mile	1948
2	Indo-Pakistan boundary	4 inches to a mile	Jan. 1951
3	Chittagong Town Survey Area 'A'	6 inches to a mile	Dec. 1948
4	Chittagong Town Survey Area 'B'	8 inches to a mile	Dec. 1948
5	Chittagong Town Survey Area 'C'	6 inches to a mile	Dec. 1948
6	Chittagong Town Survey Area 'D'	6 inches to a mile	Dec. 1948
7	Chittagong Town Survey Area 'E'	6 inches to a mile	Dec. 1948
8	Karnaphuli Reservoir	2.4 inches to a mile	Feb.1949
9	Karnaphuli Reservoir Extension	2.4 inches to a mile	Feb.1949
10	Halda Irrigation Survey	2.4 inches to a mile	Feb.1949
11	Narayanganj Town & surrounding area	6 inches to a mile	Jan.1950
12	Chandpur port area	6 inches to a mile	Jan.1950
13	Gumti Spill area	2.25 inches to mile	Feb.1951
14	Dakatia River Basin survey	2.25 inches to a mile	Feb.1951
15	Dhaka (Tejgaon) area	1:20,000	Feb.1951
16	Dhaka-Siddhirganj Transmission line	6 inches to a mile	Feb.1951
17	Mymensingh Survey 'A' and 'B'	2.25 inches to a mile	Feb.1951
18	Teesta Valley area	2.25 inches to a mile	Dec.1951
19	Lakhya Banar River	2.25 inches to a mile	Jan.1952
20	Chittagong Coastal area	2 inches to a mile	Jan.1952
21A	Assam-East Pakistan boundary	6.336 inches to mile	Apr.1951
21B	Assam-East Pakistan boundary	6.75 inches to a mile	Jan.1952
22	Chittagong Hill Tracts Forest (Saichal area)	3 inches to a mile	Jan.1952
23	Chittagong Hill Tracts Forest (kasalong area)	3 inches to a mile	Jan.1952
24	Karnaphuli Hydro Electric project (Silchari area)	3.2 inches to a mile	Jan.1952
25	Mymensingh Area 'C'	1.6 inches to a mile	Feb.1952
26	Port Chalna and its environs	1:25,000	Feb.1952
27	Noakhali area	1.6 inches to a mile	Feb.1952
28	Dhaka area	1.6 inches to a mile	Feb.1952
29	Sylhet area	1.6 inches to a mile	Feb.1952
30	Meghna River area	1:50,000	Feb.1952
31	Ganges Kobadak project	1.6 inches to a mile	Mar.1952
32	Chittagong River bank	4 inches to a mile	Mar.1952
33	Brahmaputra-Jamuna River, Bahadurabad ghat area	2.25 inches to a mile	1952
34	Brahmaputra-Jamuna River, Sirajganj ghat area	2.25 inches to a mile	1952
35	Bhairab bazar area	4 inches to a mile	1952
36	Block 'C' West of Padma and Jamuna river	1:40,000	Dec.Jan.52-53
37	Block 'B' West of Padma and Jamuna river	1:40,000	Jan.1953
38	Block 'A' West of Padma and Jamuna river	1:40,000	Feb.1953
39	Block 'D' West of Padma and Jamuna river	1:40,000	Mar.1953
40	Sundarbans area	1:40,000	1953-54
41	Chittagong hill Tracts (Northern)	1:40,000	1953-54
42	Chittagong Hill Tracts (Southern)	1:40,000	1953-54

No	Name	Scale	Date
43	Dhaka and Surrounding area	6 inches to a mile	Dec.1947
44	Dhaka and Surrounding area	1:20,000	1958
45	Dhaka and Surrounding area	1:10,000	1958
46	Ganges Kobadak project	6 inches to a mile	1958
47	Sundarbans area	12 inches to a mile	1958
48	Chittagong Hill Tracts	1:15,840	1958
49	Tista river	1:10,000	1959
50	Ganges or Padma and Meghna rivers	1:20,400	Mar.-May
51	Chittagong Town Area	1:10,000	1960
52	Khulna Town Area	1:10,000	1960
			1960
53	WAPDA Mapping project	1:36,000	1961
54	WAPDA Mapping project	1:4,000	1961
55	WAPDA Mapping project	1:8,000	1961
56	WAPDA Mapping project	1:25,000	1961
57	Pak-India Boundary	1:25,000	1961
58	IWT Chittagong	1:50,000	1963
59	Faridpur H	"	"
60	Gopalganj Q	"	"
61	Khulna K	"	"
62	IWTA-Jessore-Khulna	"	"
63	Khulna K	"	"
64	Chittagong	"	"
65	Feni-Comilla	"	"
66	Chandpur-Feni	"	"
67	Chandpur-Feni-Comilla	"	"
68	Khulna-Pirojpur	"	"
69	Barguna F	"	"
70	Dhakd-Narayanganj,Barisal,Kushtia-Jessore	"	"
71	IWT	"	"
72	Bogura	"	"
73	Jamuna river	"	"
74	Gaibandha	"	"
75	Jamalpur	"	"
76	Habiganj	"	"
77	Sylhet	"	"
78	C&B	"	"
79	Fenchuganj-Sylhet-Bhairab-Mymensingh	"	"
80	Rangpur-Mohiganj-Rajshahi	1:40,000	"
81	Jessore-Jaypurhat-Sherpur-Pabna	1:50,000	"
82	Kaptai Reservoir	1:16,000	"
83	Kaptai Reservoir	1:40,000	"
84	Madaripur-Chandpur	1:40,000	"
85	Chandpur-Barisal-Madaripur	1:10,560	"
86	Kaptai Reservoir	1:16,000	1964
87	Ganges-Jamuna river	1:50,000	1965
88	Water Development survey	1:15,840	1965
89	Water Development survey	1:10,000	1965

No	Name	Scale	Date
90	WAPDA project	1:40,000	1967
91	WAPDA project	1:10,000	"
92	Kaptai Reservoir	1:40,000	"
93	Pabna	1:40,000	"
94	Hatia Dwip	1:50,000	"
95	Mymensingh	1:10,000	1968
96	Gopalpur	"	"
97	Faridpur	"	"
98	Sirajganj	"	"
99	Tangail	"	"
100	Modhupur Forest	"	"
101	Barisal	"	"
102	Cox's Bazar-Rangamati	1:50,000	"
103	Bogra	"	"
104	Barisal	"	"
105	Dhaka Surrounding	"	"
106	Dhaka Area	1:10,000	"
107	Khulna	1:10,000	"
108	Chittagong	1:50,000	"
109	Kushtia	1:50,000	"
110	Gaibandha	1:10,000	"
111	Mirzapur	1:10,000	"
112	Narayanganj	1:50,000	"
113	Narayanganj	1:10,000	"
114	Mirzapur	1:50,000	"
115	Chandpur		
116	Aricha	1:10,000	1969-70
117	Balesshar polder	1:10,000	"
118	Fuldi Nadi	1:10,000	1970
119	Faridpur-Chandpur Nadi	1:50,000	"
120	Chandpur	"	"
121	Vera Bazar	"	"
122	Faridpur	"	"
123	Sirajganj	"	"
124	Chandpur	"	"
125	Tista Nadi	"	"
126	Halda Nadi	"	"
127	Patuakhali	"	"
128	Coastal Area	"	"
129	Coastal Area (Noakhali,Ramgati,Hatia, Noakhali, Monpura, Bhola, Patuakhali, Barguna)	1:10,000	"
130	(Hatia, Sahabazar,Sirajganj,Ganges river,Jamalpur, Bhairab,Faridpur,Ishardi, Rajbari,Modhumati river)	1:50,000	"
131	Halda river	1:10,000	1971
132	Karnaphuli project	"	"
133	Belkutchi	"	"
134	Sirajganj	"	"
135	Chandpur	"	"
136	Dhaka-Narayanganj project	"	"
137	Sandwip-Patuakhali-Hatia-Bhola	1:50,000	"
138	Dhaka town	1:10,000	"
139	Rajbari	"	"
140	Khowar project	"	"
141	Bhairab	"	"
142	Chilmari-Daiaganj	"	"

Source: Survey of Pakistan,1961 and Survey of Bangladesh.

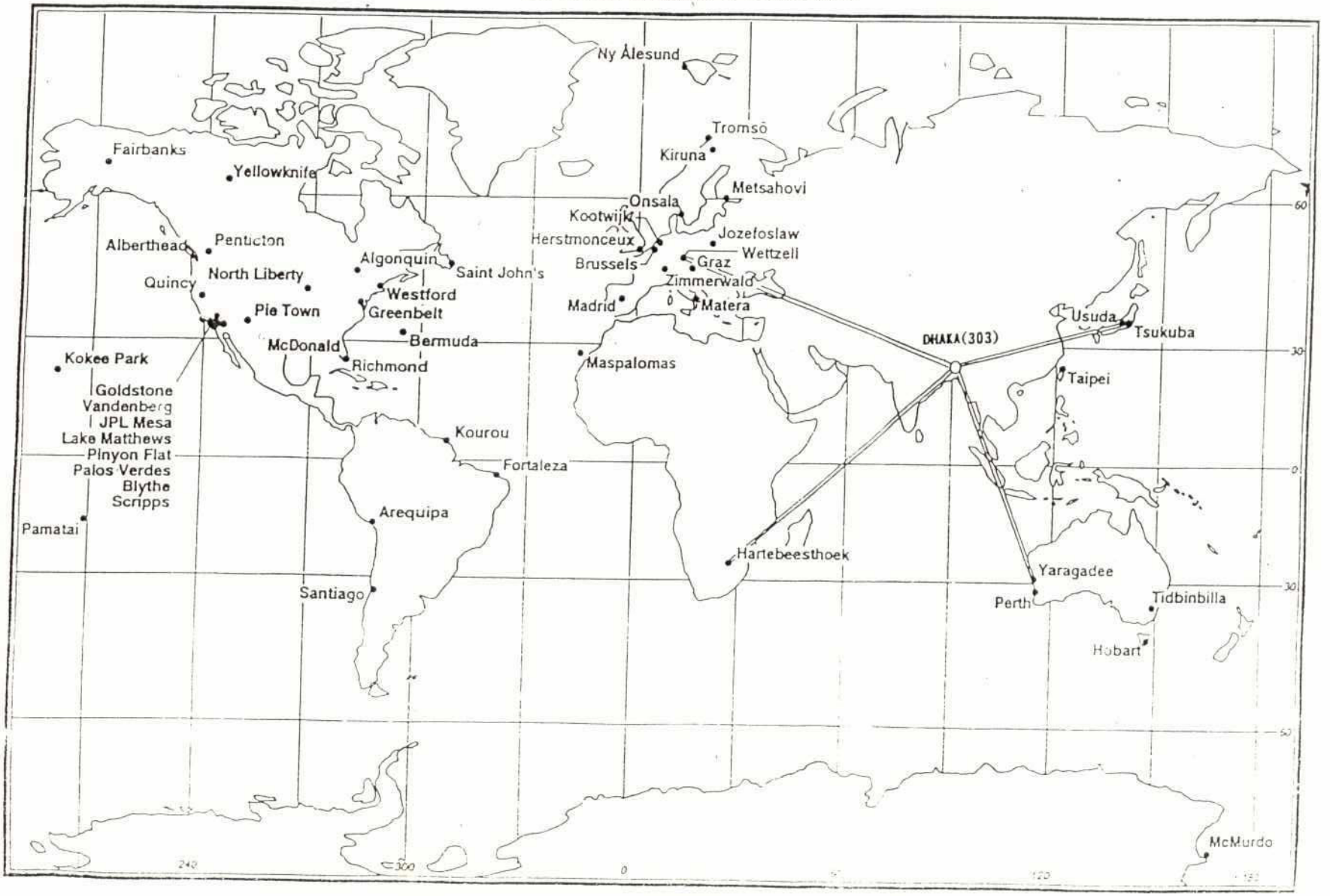
No	Name	Scale	Date
90	WAPDA project	1:40,000	1967
91	WAPDA project	1:10,000	"
92	Kaptai Reservoir	1:40,000	"
93	Pabna	1:40,000	"
94	Hatia Dwip	1:50,000	"
95	Mymensingh	1:10,000	1968
96	Gopalpur	"	"
97	Faridpur	"	"
98	Sirajganj	"	"
99	Tangail	"	"
100	Modhupur Forest	"	"
101	Barisal	"	"
102	Cox's Bazar-Rangamati	1:50,000	"
103	Bogra	"	"
104	Barisal	"	"
105	Dhaka Surrounding	"	"
106	Dhaka Area	1:10,000	"
107	Khulna	1:10,000	"
108	Chittagong	1:50,000	"
109	Kushtia	1:50,000	"
110	Gaibandha	1:10,000	"
111	Mirzapur	1:10,000	"
112	Narayanganj	1:50,000	"
113	Narayanganj	1:10,000	"
114	Mirzapur	1:50,000	"
115	Chandpur		
116	Aricha	1:10,000	1969-70
117	Balesshar polder	1:10,000	"
118	Fuldi Nadi	1:10,000	1970
119	Faridpur-Chandpur Nadi	1:50,000	"
120	Chandpur	"	"
121	Vera Bazar	"	"
122	Faridpur	"	"
123	Sirajganj	"	"
124	Chandpur	"	"
125	Tista Nadi	"	"
126	Halda Nadi	"	"
127	Patuakhali	"	"
128	Coastal Area	"	"
129	Coastal Area (Noakhali,Ramgati,Hatia, Noakhali, Monpura, Bhola, Patuakhali, Barguna)	1:10,000	"
130	(Hatia, Sahabazar,Sirajganj,Ganges river,Jamalpur, Bhairab,Faridpur,Ishardi, Rajbari,Modhumati river)	1:50,000	"
131	Halda river	1:10,000	1971
132	Karnaphuli project	"	"
133	Belkutchi	"	"
134	Sirajganj	"	"
135	Chandpur	"	"
136	Dhaka-Narayanganj project	"	"
137	Sandwip-Patuakhali-Hatia-Bhola	1:50,000	"
138	Dhaka town	1:10,000	"
139	Rajbari	"	"
140	Khowar project	"	"
141	Bhairab	"	"
142	Chilmari-Daiaganj	"	"

Source: Survey of Pakistan,1961 and Survey of Bangladesh.

Aerial Photographs Taken After Independence

Year of Photography	Area	Scale	Agency
1974-75	All over Bangladesh	1:30,000	Air Survey Co.ltd.,Canada
1976	Jamuna Bridge photography	1:30,000	
1977	Dhaka and surrounding	1:5,000	B.A.F.
1981-82	Sundarban and Chittagong Hill Tract	1:30,000	
1983-84	All over Bangladesh	1:50,000	
1990	Coastal photography Sundarbans and Chittagong	1:30,00	FINNMAP
1990-91	Jamuna River Area and Surroundings	1:20,000	FINNMAP
1990-91	Jamuna River Area and Surroundings	1:50,000	FINNMAP
1995	Upper Kangsha river	1:20,000	QUASCO Co.Ltd.,Australia
1995	Kalni river	1:20,000	-do-
1995	Sundarbans	1:15,000	-do-
1995	Chittagong and Cox's Bazar area	1:30,000	-do-
1995	Chittagong and Cox's Bazar area	1:15,000	-do-

GPS TRACKING NETWORK OF THE INTERNATIONAL GPS SERVICE FOR GEODYNAMICS
OPERATIONAL STATIONS

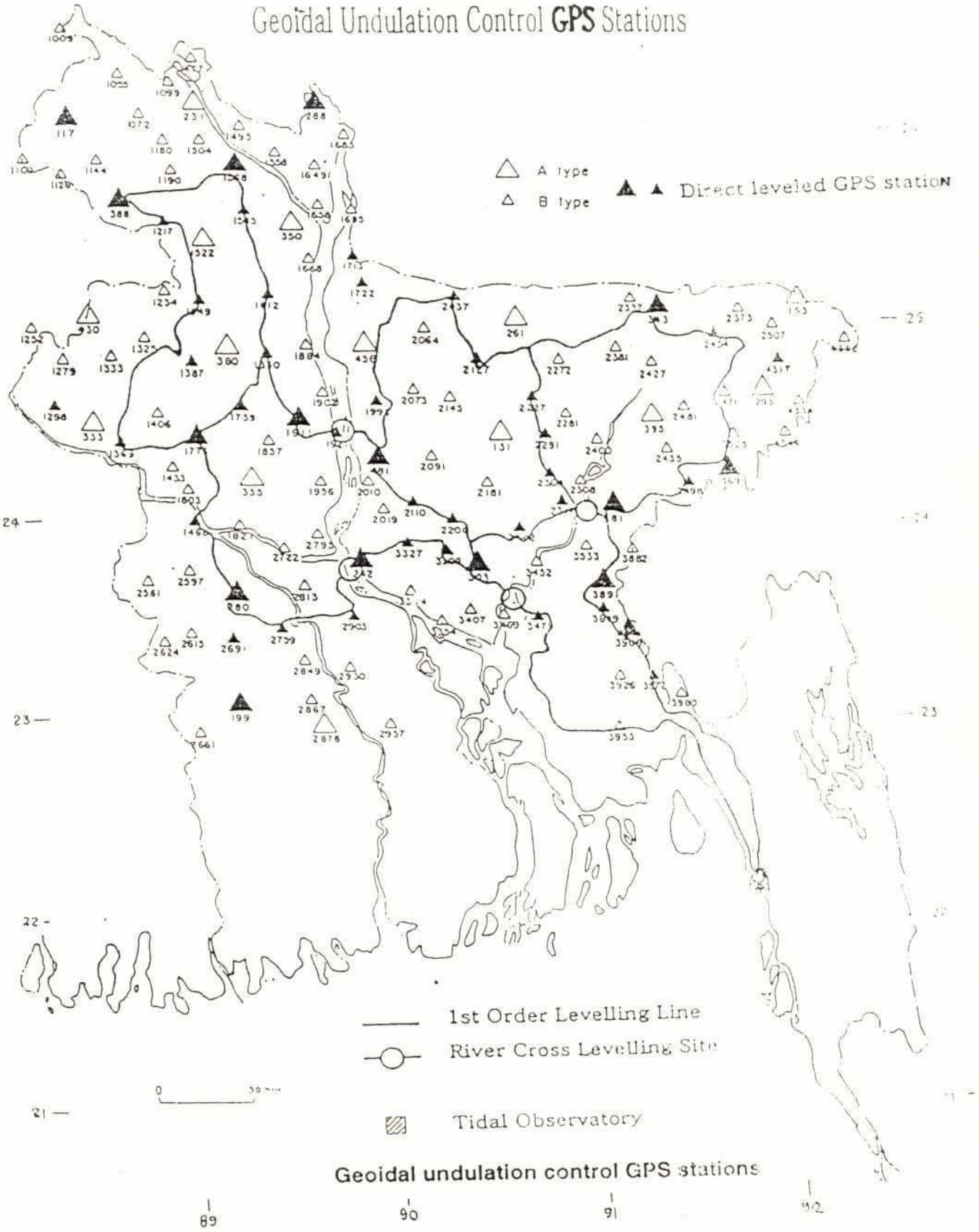


Appendix Y

Geodetic Control Network in Bangladesh

(SOB-JICA)

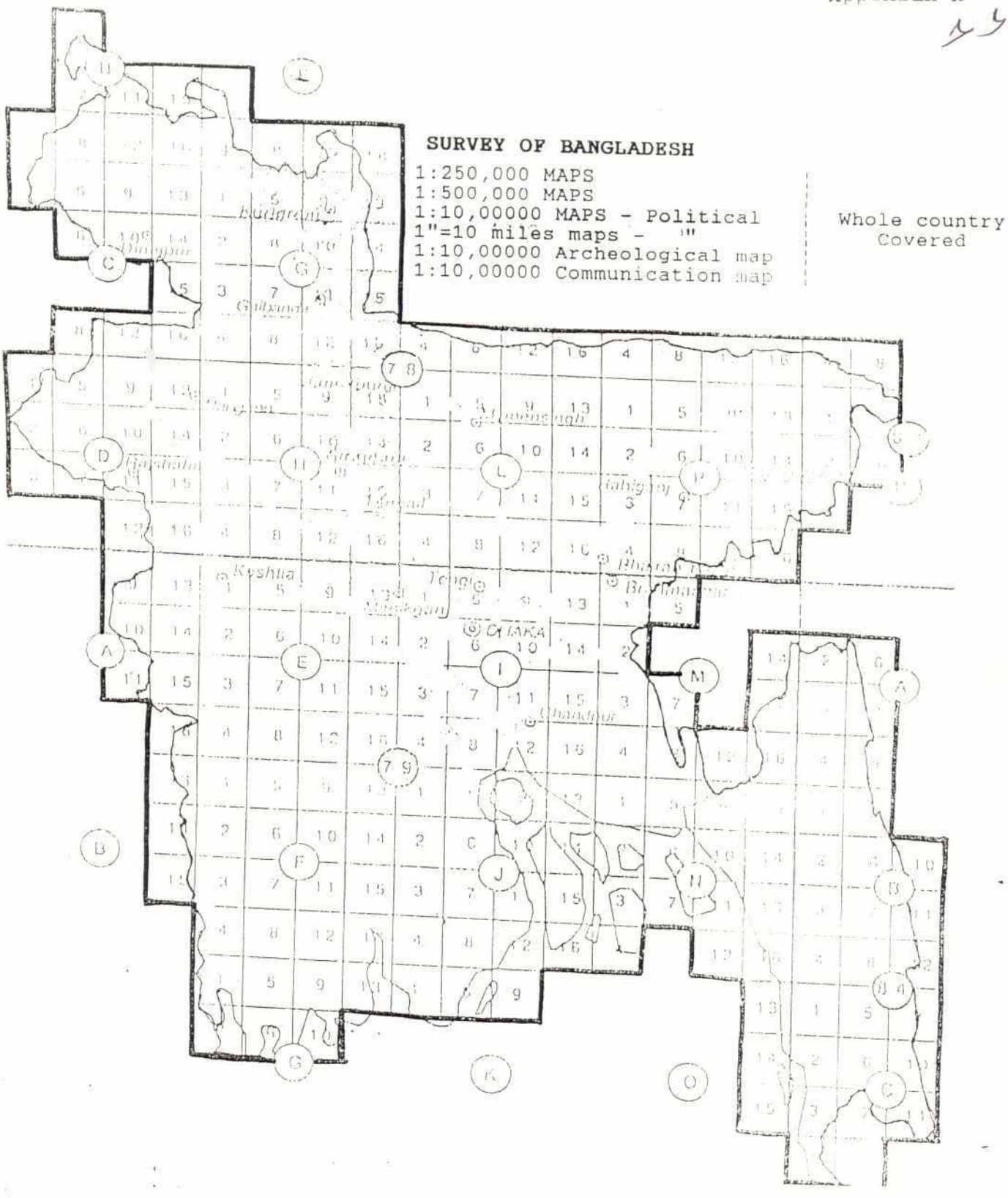
Geoidal Undulation Control GPS Stations



Geoidal undulation control GPS stations

TOPOGRAPHIC MAP SERIES (1:250,000)

Topographic map Survey of Bangladesh Each of 1:250,000 map covers 16 numbers of 1:50,000 scale maps. The headings and foot notes are shown in the same pattern as those of 1:50,000 scale maps. Generalization is used for accommodation of some details such as village huts and buildings in congested areas and townships. These maps are suitable for Regional level planning. The whole country is covered by this series.	Map name: Topo map (1/4"=1m) Type of map: Topographic Edition: Old and new editions (various dates) Survey method; These maps were compiled from various sources such as data from modern survey 1928-29, 1"= 1 m preliminary edition 1927,16"=1 mile cadastral maps 1912-13,1921-23 etc. Coverage: Whole country Printed by: Survey of Pak and SOB Source: Survey of Bangladesh Size: 47X 44 cms. Colour: multi-colour Projection: Lambart Conformal Conical (Indian Grid IIB zone) Scale: 1:250,000 Contour interval: 50' Procurement; Same procedure as in the case of 1:50,000 scale maps. Cost: 25/- per sheet.


SURVEY OF BANGLADESH
1:250,000 MAPS
1:500,000 MAPS
1:10,00000 MAPS - Political
1"=10 miles maps - "
1:10,00000 Archeological map
1:10,00000 Communication map
Whole country Covered
DHAKA

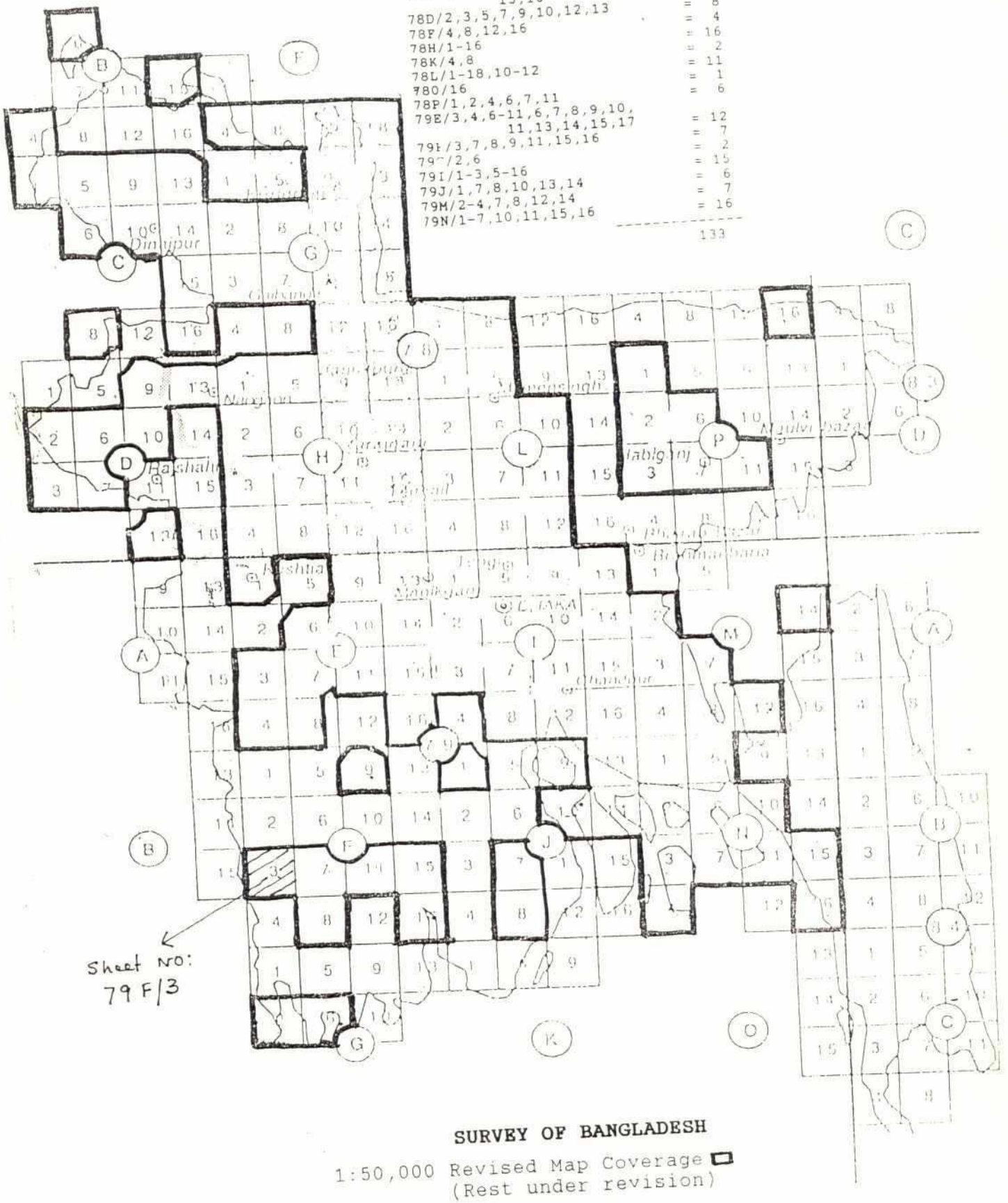
TOPOGRAPHIC MAP SERIES (1:50,000)

Topographic Map	
Survey of Bangladesh (SOB) The 1:50,000 Topographic map series originally comes from 1 inch to 1 mile maps. This scale has been changed to 1:50,000. These are 15' by 15' sheets. Spherical ticks are shown at 5' minutes interval and grid yard lines are shown to represent 1000 yards apart. These maps depict all topographical details with proper symbols The headings show "Banglades" in the top middle position. District names with a short note on survey/compilation are shown at the left upper corner & magnetic declination and sheet number at the right corner. The Footnotes show in the bottom centre "SG's imprint", followed below in succession by year of publication, scale, information on heights and detailed information as to how the map has been prepared. On the bottom leftside notes are given on Reg. No., one legend box, edition information, index to sheets while on the right side, administrative index, another legend box, printing information and Copyright Act are shown. These maps are very useful for local or regional physical planning. The position of up-dating of this series has been shown on the following page.	Map Name: 1;50,000 Topo-Map Series Type of Map: Topographic Published Date: 1951 onward Edition: 1st to 4th edition depending on revisions Survey Methods/Date: The maps of this series prepared from original survey or by photogrammetric methods or revised using latest aerial photography with full ground control and field verification. Coverage: Whole country Printed by: Survey of Bangladesh Source: Survey of Bangladesh Size: 58 by 54 CM Colour: Multi colours Projection: Lambart Conformal Conical (Indian Grid IIB Zone) Scale: 1:50,000 or 1 inch to 0.789 mile Contour interval: 50 feet. Procurement: Restricted for general users.For specific use indenters are to apply to Surveyor General of Bangladesh on prescribed proforma. Cost: Tk 25.00 per sheet.

List of Revised Survey of Bangladesh (SOB) Maps Scale: 1:50,000

Appendix B

78B/4,6,15	= 3
78C/1,5,6,8,9,10,13,14,15,16	= 10
78G/2,3,6,7,9,10,11,12,13,14, 15,16	= 12
78D/2,3,5,7,9,10,12,13	= 8
78F/4,8,12,16	= 4
78H/1-16	= 16
78K/4,8	= 2
78L/1-18,10-12	= 11
78O/16	= 1
78P/1,2,4,6,7,11	= 6
79E/3,4,6-11,6,7,8,9,10, 11,13,14,15,17	= 12
79I/3,7,8,9,11,15,16	= 7
79J/2,6	= 2
79I/1-3,5-16	= 15
79J/1,7,8,10,13,14	= 6
79M/2-4,7,8,12,14	= 7
79N/1-7,10,11,15,16	= 16
	133



SURVEY OF BANGLADESH

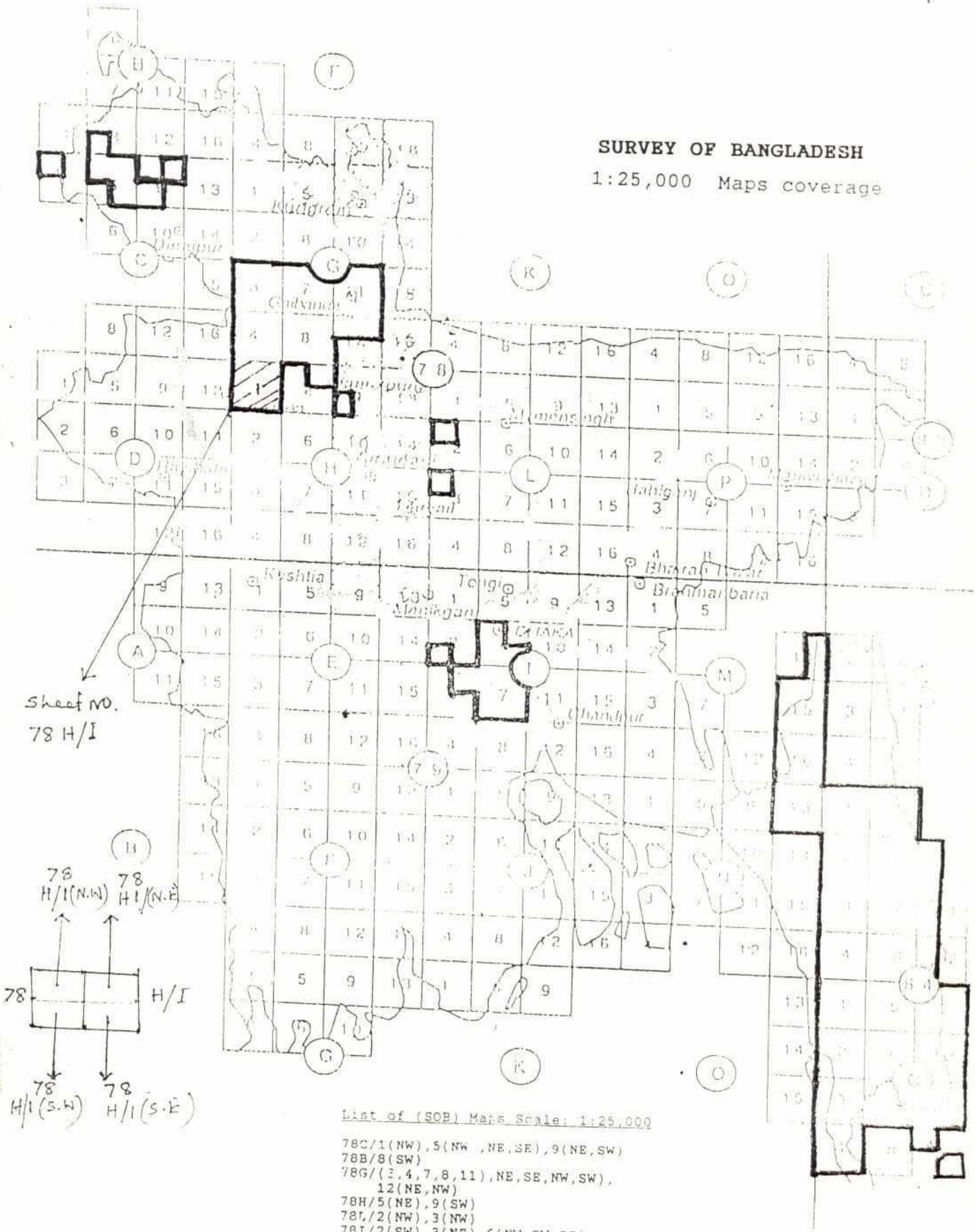
1:50,000 Revised Map Coverage ☐
(Rest under revision)

TOPOGRAPHIC MAP SERIES (1:25,000)

Topographic Map	
Survey of Bangladesh (SOB)	Map Name: Topo-Map (1:25,000)
	Type of Map: Topographic
1:25,000 scale maps depict all topographical details with appropriate symbols. The headings and footnotes are shown in the same pattern as in the case of 1:50,000 scale maps. Four of such 1:25,000 sheets cover the area of one 1:50,000 sheet. For example 84B/I gives rise to 1:25,000 sheet Nos. 84B/1/NE,84B/1/NW,81,B1/SE, 84,B1/SW. These maps specially those covering the CHT areas are very useful for local, and multipurpose physical planning. The position of coverage by this series is shown in the attached index and the sheet numbers are as under.	Published Date: 1975 onward for CHT areas & 1960s for other areas
	Edition: 1st Edition
	Survey Methods: For CHT area these sheets were prepared photogrammetrically using 1:30,00 scale (1974-75) aerial photography with adequate ground control & field verifications. For other areas these were compiled from 6"=1 mile aerial photography of 1958 with subsequent field verifications.
	Coverage: As per attached index.
	Printed by: CHT Area by SOB. Other areas by Survey of Pakistan.
	Size: 58 X 43 cms
	Colour:Multi-colours
	Projection: Lambert Conformal Conical (Indian Grid IIB Zone)
	Scale:1:25,000 or 1"=0.395 mile
	Contour Interval: 50'
	Procurement: Restricted for general users.For specific use indenters are to apply to Surveyor General of Bangladesh on prescribed proforma.
	Cost: Tk 30.00 per sheet

SURVEY OF BANGLADESH

1:25,000 Maps coverage



List of (SOB) Maps Scale: 1:25,000

78C/1(NW),5(NW ,NE,SE),9(NE,SW)
78B/8(SW)
78G/(3,4,7,8,11),NE,SE,NW,SW),
12(NE,NW)
78H/5(NE),9(SW)
78L/2(NW),3(NW)
78I/2(SW),3(NE),6(NW,SW,SE),
7(NE,SE,NW,SW)
79M/13(NE,SE),(15,16)(NE,SE,NW,SW)
79N/13,(NE,SE,NW,SW)
84B/(1-8,(NE,SE,NW,SE),(10,11,12)
(NW,SW)
84C/(1-7,9-11)(NE,SE,NW,SW),
12(NW,SE)

DHAKA CITY AND SURROUNDING MAPS (1:20,000)

Dhaka City and Surroundings Survey of Bangladesh (SOB) This large scale project map has been prepard in anticipation of its urgent need for flood control planning for Dhaka and surrounding areas. This series contains 18 map sheets with 1' foot contour interval. The maps also covers different categories of roads, embankments, waterbodies, flooded lands in the periphery of the city, name of the major important location buildings.	
	Map name: Dhaka City and Surroundings
	Type of map: Topographic
	Published date; 1989
	Edition; 1st edition
	Survey methods/date: Dhaka city & surrounding map has been compiled from 1:10,000 scale rectified enlargements obtained from 1:50,000 scale air photo-graphs taken by IGN France during 1983-84 & verified on the ground during 1987-88.
	Coverage: Dhaka City and its surrounding areas.
	Printed by: Survey of Bangladesh
	Output size: 100cm x 81cm or 39 inches x 32 inches
	Colour: Bi-colour
	Projection; Lambart Conformal Conical (Indian Grid IIB zone)
	Scale: 1:10,000
	Procurement: Restricted for general use. For specific use, application to SG of Bangladesh to be submitted on prescribed proforma.
	Cost; Thirty taka per sheet.

SURVEY OF BANGLADESH

Procedure for application for contact prints, enlargements, mosaics, etc. for Aerial Photographs of Bangladesh

The following notes are given to provide information on the basic needs for applying the above maps:

1. Indices showing scale, etc. of available aerial photographs of Bangladesh are maintained by the Surveyor General of Bangladesh, Tejgaon Industrial Area, Dhaka-8.
2. Application should be submitted in this form (5 copies) to the Surveyor General of Bangladesh.
3. All issues of serial photograps to Farms or Commercial concerns will be on loan basis and will be returned to the Surveyor General of Bangladesh within the specified period.
4. The Govt. of the People's Republic of Bangladesh reserves the right to charge Royalty for granting permission for an access to the aerial photographs. This Royalty, which will be in addition to the actual cost of preparation of the prints, enlargements or mosaics concerned, will be payable before any such prints, etc. can be supplied.
5. The attached certificate will be signed by applicants.
6. The Govt. of the People's Republic of Bangladesh reserves the right to accept or refuse the application for any aerial photographs, without assigning any reason.

TO BE FILLED IN BY INDENTORS

1.(a) Location and extent of areas for which aerial photographs is required (this may be marked on a map or diagram to be attached).
(b) Date and contact scale of photographs, if known.
(c) Details of requirements showing number of sets and copies of contact prints or enlargements, number and scale of mosaics, etc.

2. The following question be answered:

(a) Has any previous application by you for aerial photographs of Bangladesh been refused? Has any previous application been accepted? If so, give reference.

(b) For what purpose do you propose to us this aerial photograph and by whom?

(c) Do you intend to send any prints, enlargements, mosaics or their other derivations of the aerial photographs to any destination outside Bangladesh?

(d) Duration for which aerial photographs are required.

Place:.....
Date: .....

Signature.....
Name:.....

COUNTERSIGNATURE OF RECOMMENDING AUTHORITY

Approval of
Director of Operations

Rank
Designation.

0.57(a)

SURVEY OF BANGLADESH
Sample Indent Form for Supply of Maps

Indents in Duplicate are not required

INDENT No..... dated....19, for "RESTRICTED" MAPS

NOTE: "Restricted" maps will normally only be issued to officers in Government Service and official in local administrative bodies when required by them for the execution of their official duties. Indent should be sent to one of the officers designated by SOB.

DESCRIPTION OF MAPS Full details, such as sheet numbers,etc. should be given, if any of the maps ordered are to be mounted, give full in the column.	Scale	No. of Copies Required	INSTRUCTIONS FOR DESPATCH SPECIFY: (1) The name or designation and the full address of the officer to whom these maps are to be sent, and (2) If they are to be sent by post or by passenger train or by goods train. (Do not give abbreviations which only lead to mistakes)	INSTRUCTION FOR PAYMENT Strike out details which do not apply. NOTE: (1) For rules governing Book Debit etc., see para 110-111 Chap,6 Vol.1 of the Civil Accosunts Code. (2) Cash Payment may be made by Cash, Money Order remittance Transfer Receipt, or by Crossed Cheque
				Adjustment will made by: BOOK-DEBIT CASH PAYMENT Send by VPP

It is certified that:
1. This maps indented on form 0.57(a) are required for official use in this department.
2. No map will be handed over to any unauthorised person.
3. I will not export the maps, their enlargement or reduction or traces to any foreign country by air, land and sea routes, without the express permission in writing from the Ministry of Defence, Govt. of Bangladesh.
4. I will take every possible protection to prevent their being lost. I will immediately report the loss of any restricted map to the Ministry of Defence with copy to the Surveyor General of Bangladesh.

APPROVED

COUNTERSIGNATURE OF APPROVING AUTHORITY

SIGNATURE OF INDENTING OFFICER

OLD DISTRICT MAPS PUBLISHED BY SOB

No.	Title of maps	Year of edition	Scale	Price Taka	Edition
1.	Dhaka	1984	1:250,000	30.00	2nd edition
2.	Faridpur	"	"	30.00	"
3.	Mymensingh & Jamalpur	"	"	30.00	1st edition
4.	Chittagong	"	"	60.00	"
5.	Comilla	"	"	30.00	2nd edition
6.	Noakhali	1972	"	30.00	1st edition
7.	Khulna	1975	"	30.00	"
8.	Jessore	1975	"	30.00	"
9.	Khustia	1984	"	30.00	2nd edition
10.	Bakerganj & Potuakhali	1985	"	30.00	"
11.	Pabna	1976	"	30.00	1st edition
12.	Bogra	1976	"	30.00	2nd edition
13.	Rajshahi	1984	"	30.00	"
14.	Dinajpur	1985	"	30.00	"
15	Rangpur	1984	"	30.00	"

CITY AND TOWN GUIDE MAPS

No.	Title of Maps	Scale	No. of Sheets in one set	Price	Remark
1	Dhaka guide map	1:20,000	1	50.00	Published
2	Chittagong guide map	"	1	50.00	"
3	Rajshahi guide map	"	1	30.00	"
4	Comilla guide map	1:15,000	1	30.00	"
5	Sylhet guide map	"	1	30.00	"
6	Mymensingh guide map	"	1	30.00	"
7	Bogra guide map	"	1	30.00	"
8	Khulna guide map	1:20,000	1		Under preparation
9	Jessore	1:15,000	1		"
10	Chandpur	1:5,000	1		"
11	Gazipur ordinance	"	1		"
12	Sheerpur town	"	1		"
13	Netrakona	"	1		"
14	Rangpur	1;15,000	1		"
15	Dinajpur	"	1		"
16	Thakurgaon	1:5,000	1		"
					"

SURVEY OF BANGLADESH

DISTRICT MAP

Scale : 1: 2,50,000

Version : Bengali

Available districts : Shown in Appendix

Special feature include :

Update road information

Railways.

All thana with Headquarter.

Important post office and Dakbungalows.

Inland water ways

Places of Archaeological interest.

Sheet size : 59 cm x 45 cm.

Price : Taka 30.00 Per sheet.

Edition : Second.

Available at :

Surveyor General's Office, Tejgaon, Dhaka - 1208.

SURVEY OF BANGLADESH

GUIDE MAP

Scale : 1 : 15,000

Version : English.

Available

Districts : Shown in Appendix

Special features include :

Update road information.
Road names.
Main offices.
Hospitals.
Parks, Stadiums.
Railways.
Places of historical interests.
Residential areas.

Sheet size : 75. cm X 62 cm .

Price : Taka. 30.00 Per sheet.

Available at :

Surveyor General's Office. Tejgaon, Dhaka - 1208

SURVEY OF BANGLADESH

GUIDE MAP

Scale : 1: 20,000

Version Available : English.

Districts :

Special features include :

- Update road information.
- Road names.
- Main offices.
- Hospitals.
- National parks, Museum.
- Railways.
- Places of historical interests.
- Post office ect.

Sheet size : 75 cm x 62 cm.

Price : Taka. 50.00 Per sheet.

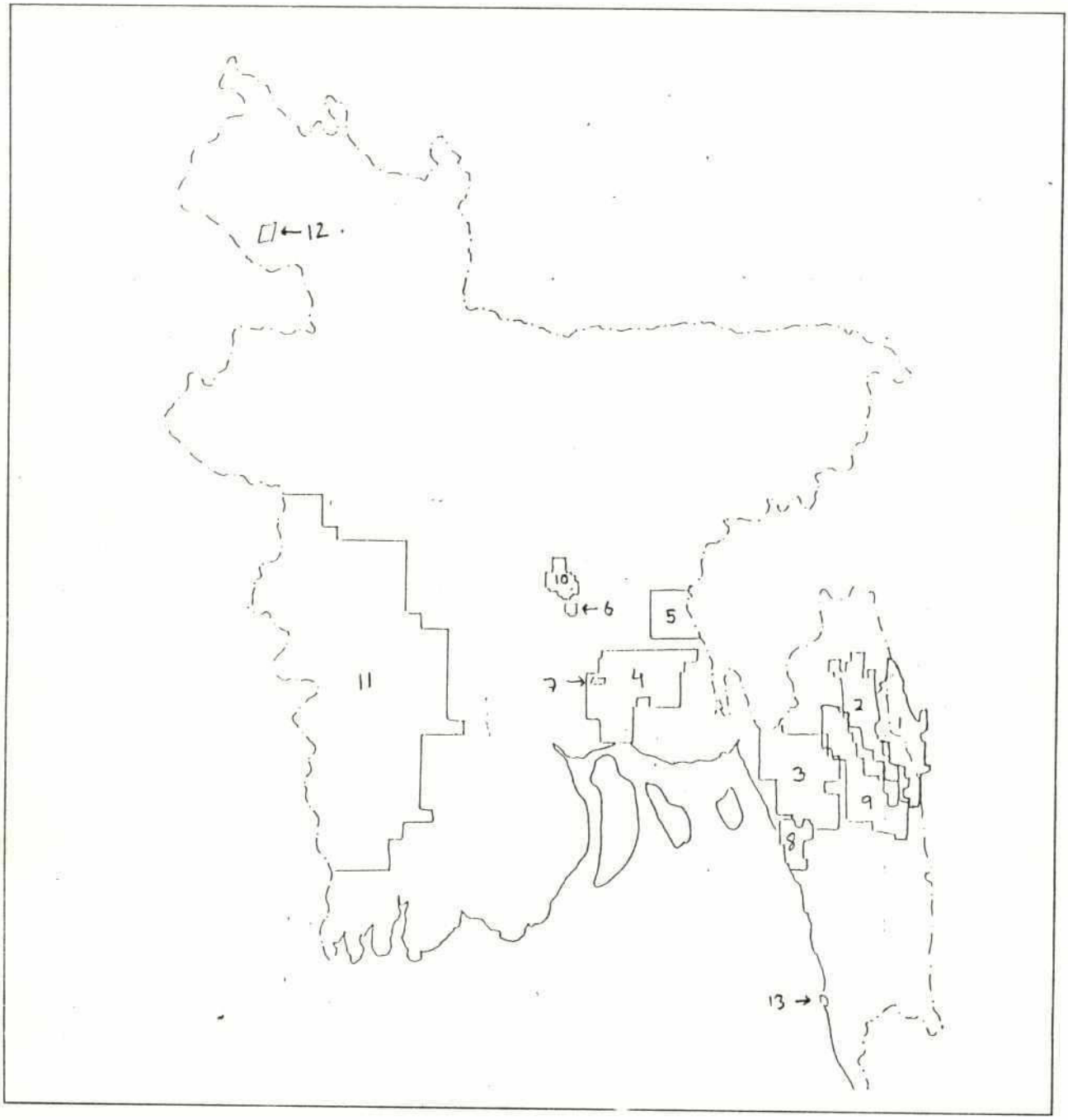
Edition : First Edition.

Available at :

Surveyor General's Office, Tejgaon, Dhaka

Table 1. A list of Project Maps prepared during Survey of Pakistan (SOP) period.

Title of Maps	Index No.	Scale	Year of Publication	Area Surveyed
Karnaphuli Reservoir	1	6 inches to a mile	1948-49	315(in.ex)
Karnaphuli Reservoir Extension	2	6 inches to a mile	1949-50	
Halda Irrigation Survey	3	4 inches to a mile	1951	591
Dakatia Basin Irrigation Survey	4	4 inches to a mile	1951-52	718
Gumti Spill area	5	4 inches to a mile	"	-
Narayanganj Town & Surrounding area	6	16 inches to a mile	1951	20
Chandpur port area	7	12 inches to a mile	1952	5
Chittagong Town & Surrounding area	8	16 inches to a mile	"	90
Karnaphuli Hydro Electric project	9	6 inches to a mile	1953	400
Dhaka Town & Surrounding area	10	16 inches to a mile	1954-55	-
Ganges Kobadak project	11	4 inches to a mile	1955-56	5872
Dinajpur pilot tube well scheme	12	4 inches to a mile	1957	28
Cox's Bazar	13	16 inches to a mile	1958	2.7
North Patenga	14	1 inch to 50 feet	1958	-
Tista project	15	4 inches to a mile	??	2500



Location of projects maps done by SOP

SURVEY OF BANGLADESH

TOPOGRAPHICAL MAP

(International series)

Scale : 1 : 1,000,000

Version : English.

Special features includes :

Update road information.

Railways.

Hill features and ground relief.

Cities and important towns.

Inland waterways.

Sheet size : 66 cm x 48 cm.

Price : Taka. 25.00 Per sheet.

Available at : Surveyor General's Office, Tejgaon, Dhaka - 1208.

SURVEY OF BANGLADESH

B. A. F. CHART

Scale : 1 : 1,000,000

Version : English.

Area covers : Whole of Bangladesh in one sheet

Special features include :

Road information.
Railways.
Position of cities and major towns.
Rivers and streams showing waterways.
Hill features and ground relief.
Aerodromes.
Grid references.
Ground control points with heights.

Sheet size : 75.5 cm X 56.5 cm .

Price : Taka 25.00 Per sheet.

Edition : 1990

Available at : Surveyor General's Office, Tejgaon, Dhaka - 1208.

82

SURVEY OF BANGLADESH

DISTRICT MAP

Scale : 1: 1,25,000

Version : Bengali.

Area covers : 64 maps cover whole of Bangladesh (64 districts)

Special features include:

Update road information.
Railways.
All Thana with Headquarters.
Important localities.
Post offices and Dakbungalows.
Inland waterways.
Places of historic interests.

Sheet size : 59 cm x 45 cm.

Price : Taka. 30.00 per sheet.

Edition : First

Available at :

Surveyor General's Office, Tejgaon, Dhaka - 1208.

SURVEY OF BANGLADESH

BANGLADESH MAP

Scale : 1 inch to 32 Miles

Version : English & Bengali

Area Covers : Whole of Bangladesh in one sheet.

Special features include :

Update road information

Position of district Headquarter with names.

Railways.

Inland Waterways.

Sheet size : 39.5 cm x 30.5 cm.

Price : Taka 10.00 Per sheet.

Available at :

Surveyor General's Office, Tejgaon, Dhaka-1208.

SURVEY OF BANGLADESH

TOPOGRAPHICAL MAP

(INTERNATIONAL SERIES)

Scale : 1 : 5,00,000

Version : English.

Special features include :

Update road information.
Railways
Position of cities and major towns.
Rest houses.
Ground control points with their heights.
Grid references.
Aerodromes etc.

Sheet size : 71 cm X 52.5 cm

Price : Taka 25.00 Per sheet.

Edition : 1990

Available at : Surveyor General's Office, Tejgaon, Dhaka - 1208.

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SURVEY OF BANGLADESH

BANGLADESH MAP

Scale : 1 inch to 10 Miles

Area Covers : Whole of Bangladesh in one sheet.

Version : Bengali & English.

Special features include :

Update road information

Railways, inland water ways.

All administrative district's boundaries.

Thana head quarters.

Place of Archaeological importance

Sheet Size : 111 cm x 82 cm

Price : Taka 50.00 Per sheet.

Available at :

Surveyor General's Office, Tejgaon, [illegible]

SURVEY OF BANGLADESH

BANGLADESH MAP
(Showing Police Station)

Scale : 1 inch to 16 miles

Version : English.

Area Covers : Whole of Bangladesh in on sheet.

Special features Include :

All Police Station of Bangladesh

International, Division and District Boundary

Sheet Size : 80 cm x 55cm

Price : Taka 25.00 Per sheet.

Available at :

Surveyor General's Office, Tejgaon, Dhaka - 1208

SURVEY OF BANGLADESH

BANGLADESH MAP
(Showing Ancient Monuments)

Scale : I inch to 16 miles

Version : English.

Area covers : Whole of Bangladesh in one sheet.

Special features include :

International, Division and district Boundaries.

Railways.

Jungle areas

Mosque, Dargas, Mound, Fort etc.

All ancient monuments of Bangladesh.

Sheet Size : 80 cm x 55 cm.

Price : Taka 25.00 Per sheet.

Available at :

Surveyor General office, Tejgaon, Dhaka 1208, Bangladesh.

SURVEY OF BANGLADESH

BANGLADESH MAP
(Showing communications)

Scale : I : 1,000,000
Version : English
Area covers : Whole of Bangladesh in one sheet.

Special features include :

Update road information.
Position of major towns with their names.
Railways
All air routes, Steamer service
International, division and district boundaries.
Places of archaeological interest.

Sheet size : 80 cm X 55 cm.
Price : Taka 25.00 Per sheet.
Edition : 1988

Available at :

Surveyor General's Office Tejgaon, Dhaka - 1208.

SURVEY OF BANGLADESH

BANGLADESH MAP

Scale : 1: 1,000,000
version : English
Area Covers : Whole of Bangladesh in one sheet.

Special features include :

Update Highways information.
Railways.
International, division and
district boundaries.
Main rivers.
Thana Head quarters.
Places of archaeological interest.

Sheet size : 80 cm x 55 cm
Price : Taka 25.00 Per sheet.

Available at :

Surveyor General's Office Tejgaon, Dhaka - 1208.

Chapter C

Bangladesh Water Development Board
and
Water Resources Planning Organization

Bangladesh Water Development Board (BWDB) in association with the then Survey of Pakistan (SOP) produced 4"=1 mile Water Development Maps with 1' foot contour interval during 1960s. These maps in combination with other topo data were extensively used for FAP study purposes. 1:40,000 scale irrigation maps and 8" = 1 mile maps were also used. Coverage and special features of these maps will be seen in the pages that follow.

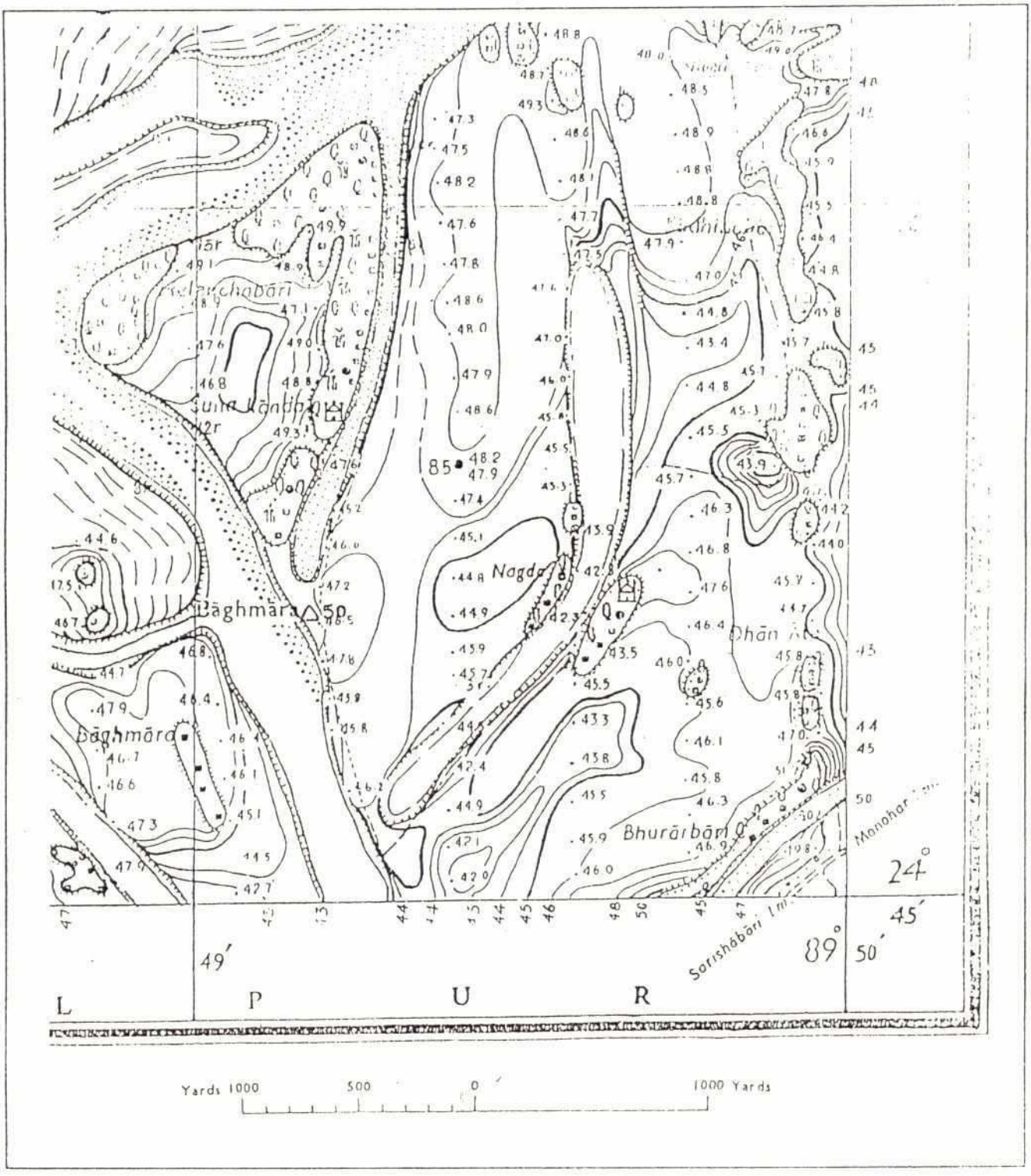
WARPO produced a number of planning maps list of which is enclosed herewith.

TOPO-MAP SERIES (4" = 1 Mile)

Water Development Map EPWAPDA (now BWDB) and SOB 4'-1 mile map series with one feet contour interval was prepared by the then EPWAPDA Survey parties for certain areas and by the then Survey of Pakistan survey parties for the rest areas. Total coverage by this series is shown in the attached index. These are 5'by 5' sheets. Only spherical grid lines at 1" minute apart are shown in the body of the map. The headings and foots are shown in the same pattern as those appearing in SOB topo map series. Nine such sheets cover one 1;50,000 scale map. These maps depict all types of roads, cart track,footpath,railways, rivers, tidal rivers with islands, canals, embankments, wells, broken ground,marsh, TO,PO,PS, inspection bungalows (all types), villages, huts,religious centres,trees, gardens, forests,all types of boundaries, BMs and spot heights.Though old, these maps are very useful as existing data base for water resource management works.	Map name: Water Development Map (1"=4m) Type of map: Topographic Published date: 1960s Edition: 1st edition (no update) Survey method: Planimetric ground control provided with theodolite (1.6"=1 mile) were used for ground verification. Existing BMs were used to provide further level control and extensive field levelling was done to provide spot heights Contouring was done by interpolation from spirit levelled spot heights. Coverage: As per attached index. Printed by: Survey of Pak. office, Dhaka Source: BWDB Output size: 60 by 74 cms Colour: Two colours Projection: Lambart Conformal Conical (Indian grid IIB zone) Scale: 4"=1 mile or 1:15840 Procurement: Restricted for general use. For specific use application on prescribed SOB proforma should be submitted in duplicate to the Chief Engineer, BWDB. Cost: 180 Tk for security and Tk 20 as rent per month.

c:HAK-1;tc

Water Development Map (four inch series) : Sample Map

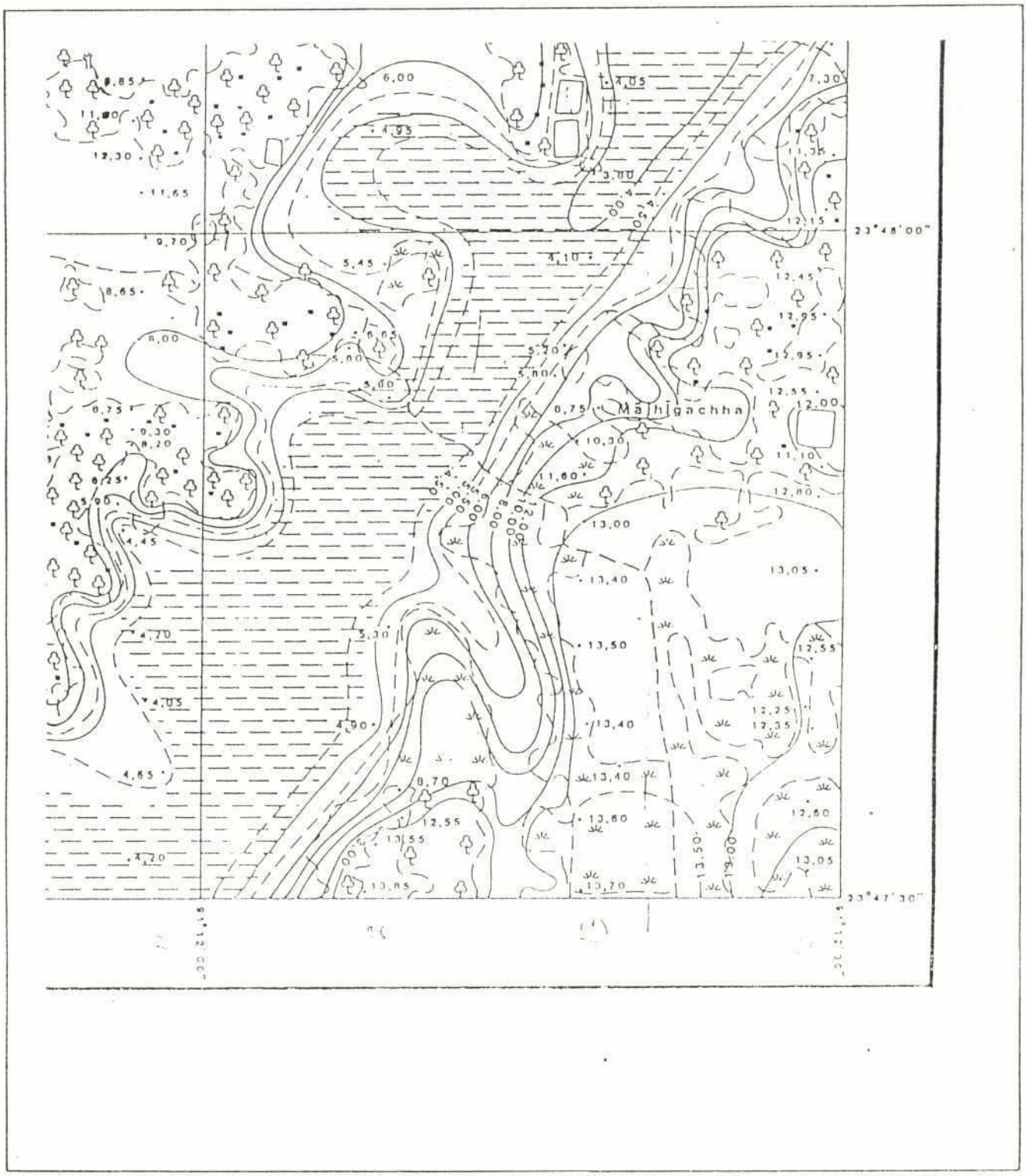


WATER DEVELOPMENT MAP (EIGHT INCH SERIES)

Water Development Map	
Survey of Bangladesh (SOB)	Map name: Water Development Map(8'=1m)
	Type of map: Topographic
This one feet contour map was prepared for implementation of first water master plan for East Pakistan in 1964. In this series most of the heading, foot notes and other information displayed in the margin such as symbol tables, sheet index, administrative index etc. are common to all the sheets which are of the same pattern as shown in SOB topo map series. These maps contain all topo-details as shown in 4"=1m scale maps. These are also useful as reference data base for sources management works. The area covered by these maps are shown in the index attached. Verification of all the topographic details were carried out on the ground with 8"=1 mile rectified enlargements.	Published Date: Nineteen Sixties
	Edition: 1st edition(no update)
	Survey Methods/Rectified aerial photographs were used during the ground survey. Planimetric ground control was provided by traverse for the rectification of individual photographs covering the area. Astronomical observations were made to determine the azimuth of a traverse side after every 20 to 30 traverse angles.
	Coverage; Most part of the Chalan beel, Atrai basin including lower part of the Jamuna river and Karnafuli Dam reservoir area.
	Printed by: Printed at the Survey of Pakistan offices, Dhaka and published under the authority of Surveyor General of Pakistan.
	Source; Bangladesh Water Development Board
	Output size; 94 by 101 cms
	Color: Two-colours
	Projection; Lambart Conformal Conical (Indian Grid IIB zone)
	Scale: 1:7920 or 8 inches to a mile.
	Procurement: Restricted for general use. For specific use same procedure as for 4"=1m maps.
	Cost; 180 Tk initial security and 20 TK rent per month.

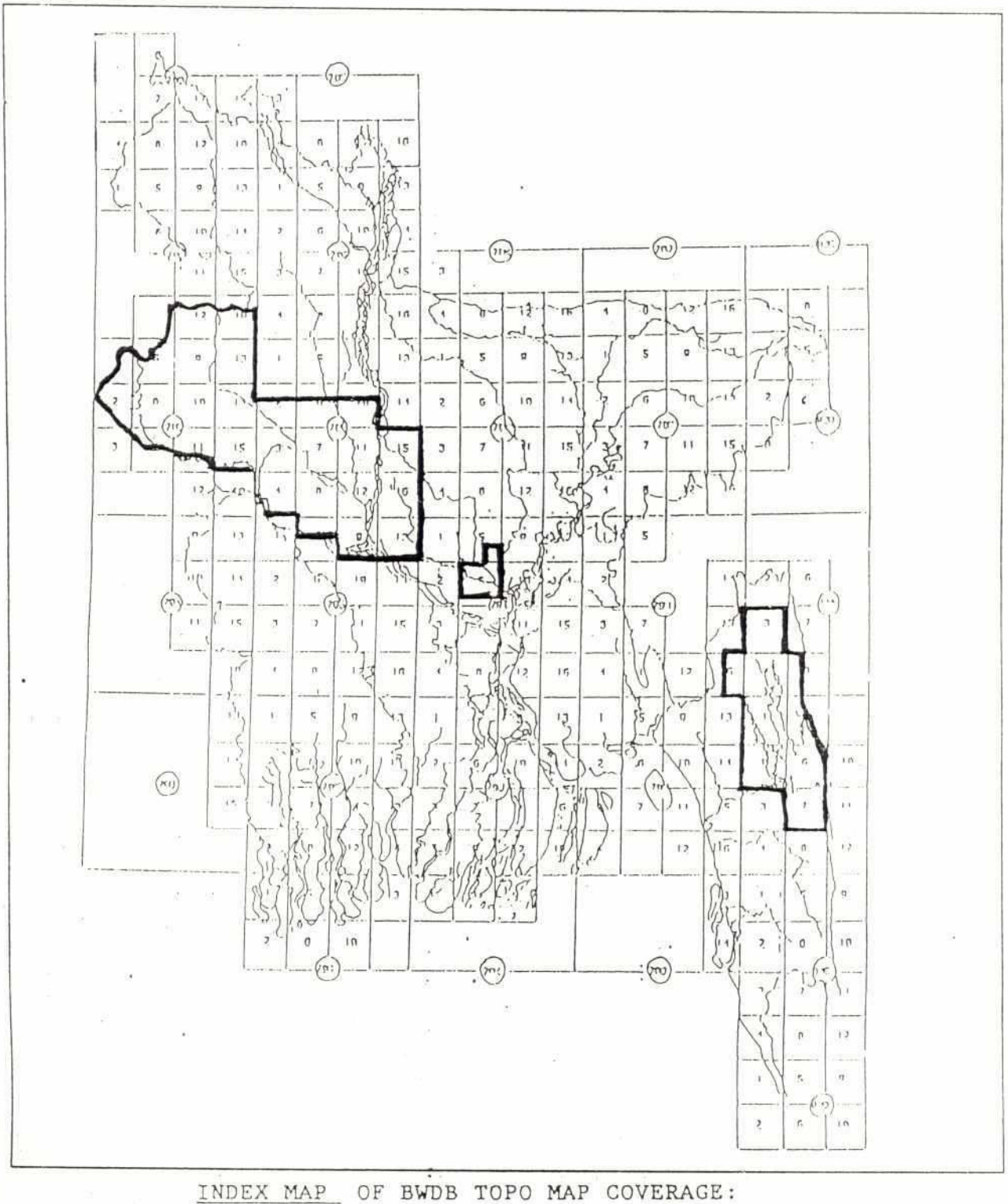
28

WATER DEVELOPMENT MAP (8" SERIES)

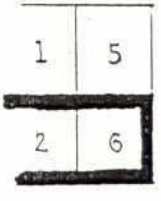


SAMPLE MAP

WATER DEVELOPMENT MAP 4" = 1 mile and 8" = 1 mile



INDEX MAP OF BWDB TOPO MAP COVERAGE:



4" TO A MILE MAP
EXCEPT HILLY AREAS.

8" TO A MILE MAP

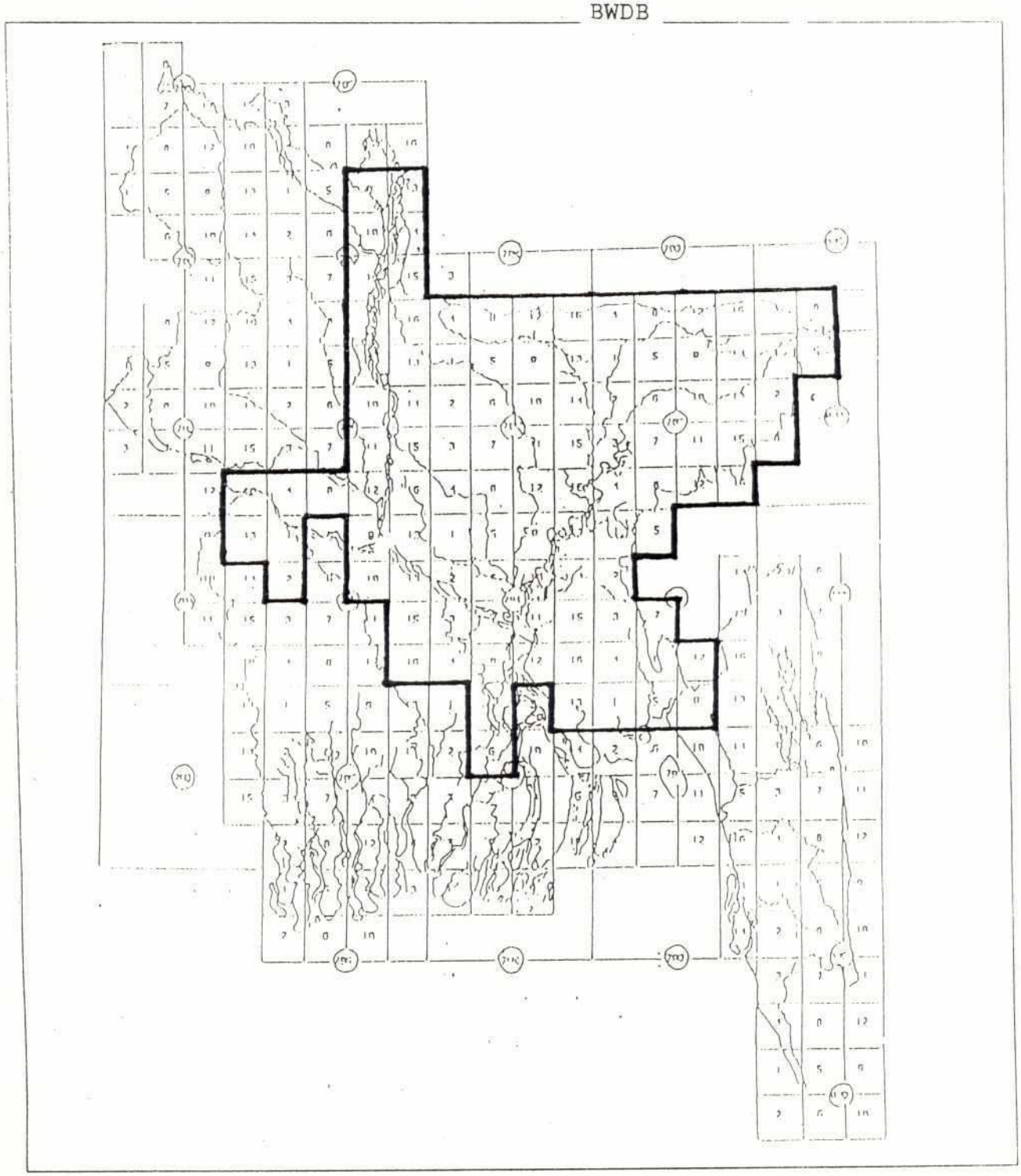
EAST BENGAL IRRIGATION PLANNING MAP (1:40,000)

East Bengal Irrigation Planning Map Survey of Bangladesh (SOB) 5 ft. contour lines have been shown in these maps by interpolation between spirit levelled spot heights. The pillars embedded 80 chain apart are numbered on the ground. Areas of marsh symbol are inundated from May to November. The original survey had been done in 1910-11 and later corrected from air photographs on 1.6 inches to a mile scale taken during 1952.	Map name: East Bengal Irrigation Planning Map
	Type of map: Topographic
	Published date: 1955
	Edition: 1st edition(no update)
	Coverage: Almost 2/3 of Bangladesh, specially in North Eastern part of Bangladesh.
	Printed by: Printed by Survey of Pakistan.
	Source: Bangladesh Water Development Board (BWDB)
	Output size:94by71 cms or 37by28 inch.
	Color: Two colours
	Projection; Lambart Conformal Conical (Indian Grid IIB zone)
	Scale; 1,40,000 or 1.58" to a mile.
	Procurement: Restricted for General user. Application on Survey of Bangladesh prescribed proforma should be submitted to SG through the Chief Engineer, Planning, BWDB for Water Resources Management Works.
	Cost: 180 Tk initial security and monthly 20 taka rent per sheet.

COVERAGE

IRRIGATION PLANNING MAP (1:40,000)

BWDB



WATER RESOURCES PLANNING ORGANIZATION (WARPO)

WARPO (Previous MPO) an autonomous body established in March 1992 has developed various planning maps including land and soil resources maps.

Most of the maps produced by WARPO are in tracing papers.

Table shows a list of maps prepared by Master Plan Organization

No	Title	Scale	Drawing No.
1	Completed & on-going BWDB projects	1;500,000	E-001
2	Forestry and Fishery	1;500,000	E-002
3	Tubewell Development	1;500,000	E-003
4	Communication & Power Generation and Distribution	1;500,000	E-004
5	Low lift pump development	1;500,000	E-005
6	Initial Planning Area	1;500,000	E-006

No	Title	Scale	Drawing No
7	Zila, Upazila and Thana Map	1:500,00	E-007
8	Physiography Map	1:500,00	E-008
9	Flood Phase Distriution by upazila & Catchment	1:500,00	E-009
10	Land Use Association Map	1:500,00	E-010
11	Zila, Upaziala and Thana Catchments and Regional Boundary Map	1:500,00	E-011
12	Maximum Depth of Water in Master below Ground Surface period 1970-83	1:500,00	E-012
13	DPHE Well depth Map	1:500,00	E-013
14	Reduce of Drg. No. E-012	1:1:000,00	E-014
15	Reduced of Drg. No. E-007	1:1:000,00	E-015
16	Mean Annual Isohyetal Map	1:500,00	E-016
17	Land Use Association Map	1:500,00	E-017
18	Rivers in Bangladesh	1:500,00	E-018
19	River in Bangladesh	1:1:000,00	E-019
20	Specific Capacity L/S/M (After four hours pumping)	1:500,00	E-020
21	Isohyetal Map of Maximum Five-year ten-day rainfall	1:500,00	E-021
22	Isohyetal Map of Maximum Five-year two-day rainfall	1:500,00	E-022
23	Flood Source Map	1:1:000,00	E-023
24	Maximum One-day Mean Annual Flood Depth Map (North-West Region)	1:500,00	E-024
25	Maximum One-day Mean Annual Flood Depth Map (North-West Region)	1:500,00	E-025
26	Iron Concentration Map	1:500,00	E-026
27	Monthly Streamflow Availability "November"	1:500,00	E-027
28	Monthly Streamflow Availability "December"	1:500,00	E-028
29	Monthly Streamflow Availability "January"	1:500,00	E-029
30	Monthly Streamflow Availability "February"	1:500,00	E-030
31	Monthly Streamflow Availability "March"	1:500,00	E-031
32	Monthly Streamflow Availability "April"	1:500,00	E-032
33	Monthly Streamflow Availability "May"	1:500,00	E-033
34	Physiographic Map	1:500,00	E-034
35	Mean Annual Potential Groundwater Recharge	1:500,00	E-035

No	Title	Scale	Drawing No
36	M in Ele.of G.M.T.(April to May Pre-development period(1955-1977)	1:500,00	E-036
37	Land Surface Elevation	1:500,00	E-037
38	Max Ele.of G.M.T.(August to September)Pre-development period (1966-1977)	1:500,00	E-038
39	Max Ele.of G.M.T.(August to September)Post-development period (1982)	1:500,00	E-039
40	Min Ele.of G.M.T.(April to May) Post-Development period (1982)	1:500,00	E-040
41	Location Map BWDB Observation Well	1:1:000,00	E-041
42	Index Map Showing the Haor Project	1:500,00	E-042
43	Physiographic Map of Bangladesh	1:1:000,00	E-043
44	20 Year Flood Depth Map: Northeast Region	1:500,00	E-044
45	20 Year Flood Depth Map:Southeast Region	1:500,00	E-045
46	20 Year Flood Depth Map:Southwest Region	1:500,00	E-046
47	Catchment, Planning Areas and Regions	1:1:000,00	E-047
48	Panel Diagram of the N-W, N-E,S-E Region(Based on Geological Dril Holes)	1:250,00	E-048
49	Land Use (Areal Distribution of flooded Land	1:500,00	E-049
50	Location Map	1:500,00	E-050
51	Hydrogeology	1:1:500,00	E-051
52	Distribution of Tubewells	1:500,00	E-052
53	Distribution of Tubewells:Northeast Region	1:250,00	E-053
54	Distribution of Tubewells:Southwest Region	1:250,00	E-054
55	Distribution of Tubewells:Southeast Region	1:250,00	E-055
56	Distribution of Tubewells:Northwest Region	1:250,00	E-056
57	Streamflow Iso-saline Map Mean Monthly Maximum Salinity "December"	1:500,00	E-057
58	Streamflow Iso-saline Map Mean Monthly Maximum Salinity "January"	1:500,00	E-058
59	Streamflow Iso-saline Map Mean Monthly Maximum Salinity "February"	1:500,00	E-059
60	Streamflow Iso-saline Map Mean Monthly Maximum Salinity"March"	1:500,00	E-060
61	Streamflow Iso-saline Map Mean Monthly Maximum Salinity"April"	1:500,00	E-061
62	Streamflow Iso-saline Map Mean Monthly Maximum Salinity"May"	1:500,00	E-062
63	Present and Future Deep-set Areas	1:1:000,00	E-063
64	Fishery Resources (Standing Water Bodies Location	1:500,00	E-064

No	Title	Scale	Drawing No
65	Topography	1:500,00	E-065
66	Pumping Lift Related to Groundwater Development (Depth of Water Table)	1:500,00	E-066
67	Transmissivity of.Main Aquifer	1:500,00	E-067
68	Map of Jessore & Kushtia Districts, Showing Rivers and Baors	1:1:000,00	E-068
69	Catchment overlay of Bangladesn	1:1:000,00	E-069
70	Flood Map-Approx. 10 year return	1:500,00	E-070
71	Range of Observed Maximum Salinity Levels between Nov. 1976 and June 1983	1:500,00	E-071
72	Surface Water Availability, Water Year 1983, Water Use Condition	1:500,00	E-072
73	Maximum One-day Mean Annual Flood Depth Map	1:500,00	E-073
74	Maximum One-day 20 Year Flood Depth Map	1:500,00	E-074
75	Contour Map of Maximum Ele.of Water Table (Post Development Peiod April-May 1982)	1:1:000,00	E-075
76	Contour Map of Maximum Ele.of Water Table (Post Development Period August-September (1982)	1:500,00	E-076
77	Planning Base	1:500,00	E-077
78	Mean Surface Clay Thickness	1:500,00	E-078
79	Maximum Surface Clay Thickness	1:500,00	E-079
80	Sand Silt percent with 50 percent tile Clay	1:500,00	E-080
81	Depth of Main Aquifer	1:500,00	E-081
82	Upper Clay Silt/Sand P.C.	1:500,00	E-082
83	Roads and Railway Communication	1:500,00	E-083
84	Soil Association Map, Planning area 1 to 60	1:250,00	E-084
85	Location of Observation wells	1:500,00	E-085
86	BWDB Project Completed and Expected to be Completed upto TFYP	1:500,00	E-086
87	BWDB Spillover and Proposed Projects under FFYP	1:500,00	E-087
88	Index Maps of Ongoing and Proposed Projects for FFYP (40 Nos)	1:500,00	E-088

Chapter D

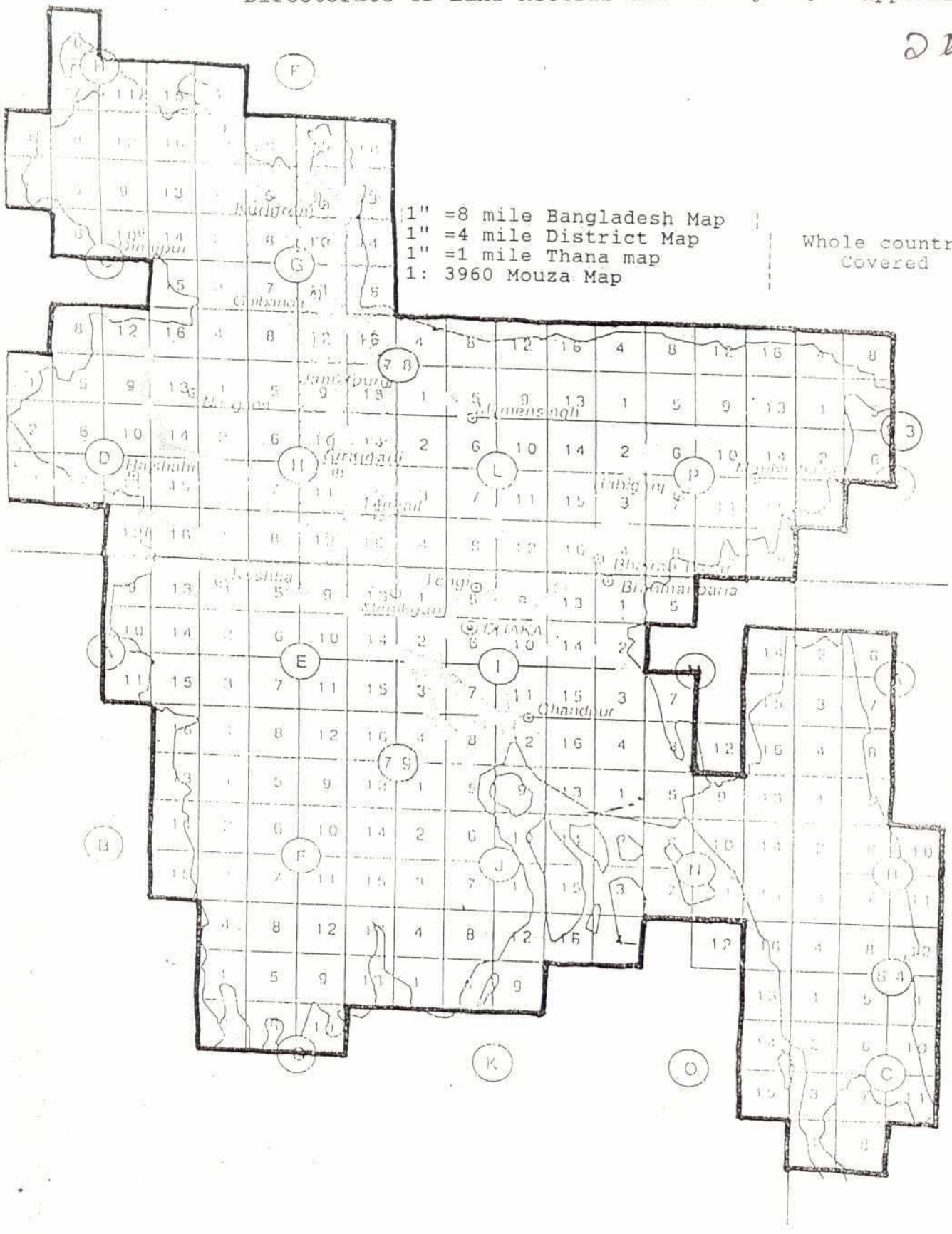
DIRECTORATE OF LAND RECORDS AND SURVEY (DLR&S)

The Directorate of Land Records and Survey (DLR&S) is the authority to prepare Cadastral or mouza maps of Bangladesh for revenue administration and documentation of land rights.

The department publishes the following series of maps:

1. Cadastral maps or mouza maps at 16" = 1 mile scale
2. Thana/Upazila maps (administrative) at 1" = 1 mile scale
3. District maps (administrative) at 1" = 4 miles scale
4. Small-scale administrative map of Bangladesh at 1" = 8 miles

2 D 6

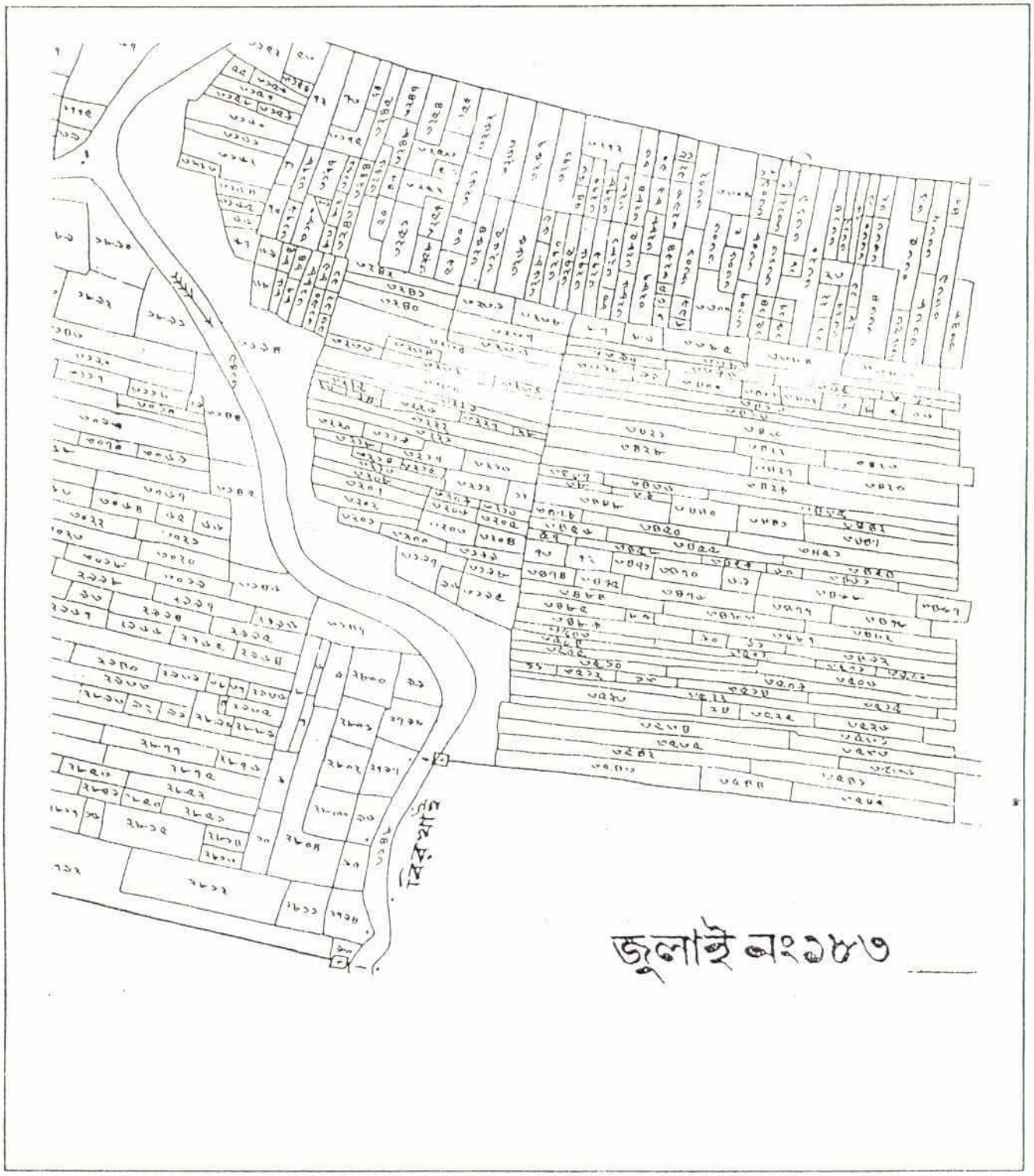

1" =8 mile Bangladesh Map
1" =4 mile District Map
1" =1 mile Thana map
1: 3960 Mouza Map
Whole country Covered

CADASTRAL OR REVENUE MAPS

Cadastral or Mouza Map Directorate of Land Records and Survey (DLR&S) Cadastral maps are considered to be the most accurate and authentic large-scale maps in Bangladesh. The Mouza maps represent the lowest revenue administrative units in Bangladesh. The cadastral survey started in 1890 and completed in 1940. A Mouza map shows the exact location of the individual lot boundary with its number, travrse and GT stations, BMs with heights, indiras, Tube wells, Pan-bazar, metalled and kacha roads, rivers and khals.	Map name; Cadastral map or Mouza map Type of map: Revenue/Administrative Published date; 1890-1940 Edition; CS is for the whole country and Revisional Survey (RS) is going on. Survey methods/Date: plain Table and Chain Survey. Coverage: Whole country. Printed by: Survey of india(CS) Survey of Pakistan/Bangladesh (RS) Output size: 77*60 cm or 30.5*23.5 inches Colour: black and white Scale: 16 inches to one mile Procurement; Formal request to DlR officials (charge officer) Cost: 100 Tk per sheet.

Appendix K

CADASTRAL OR MOUZA MAP

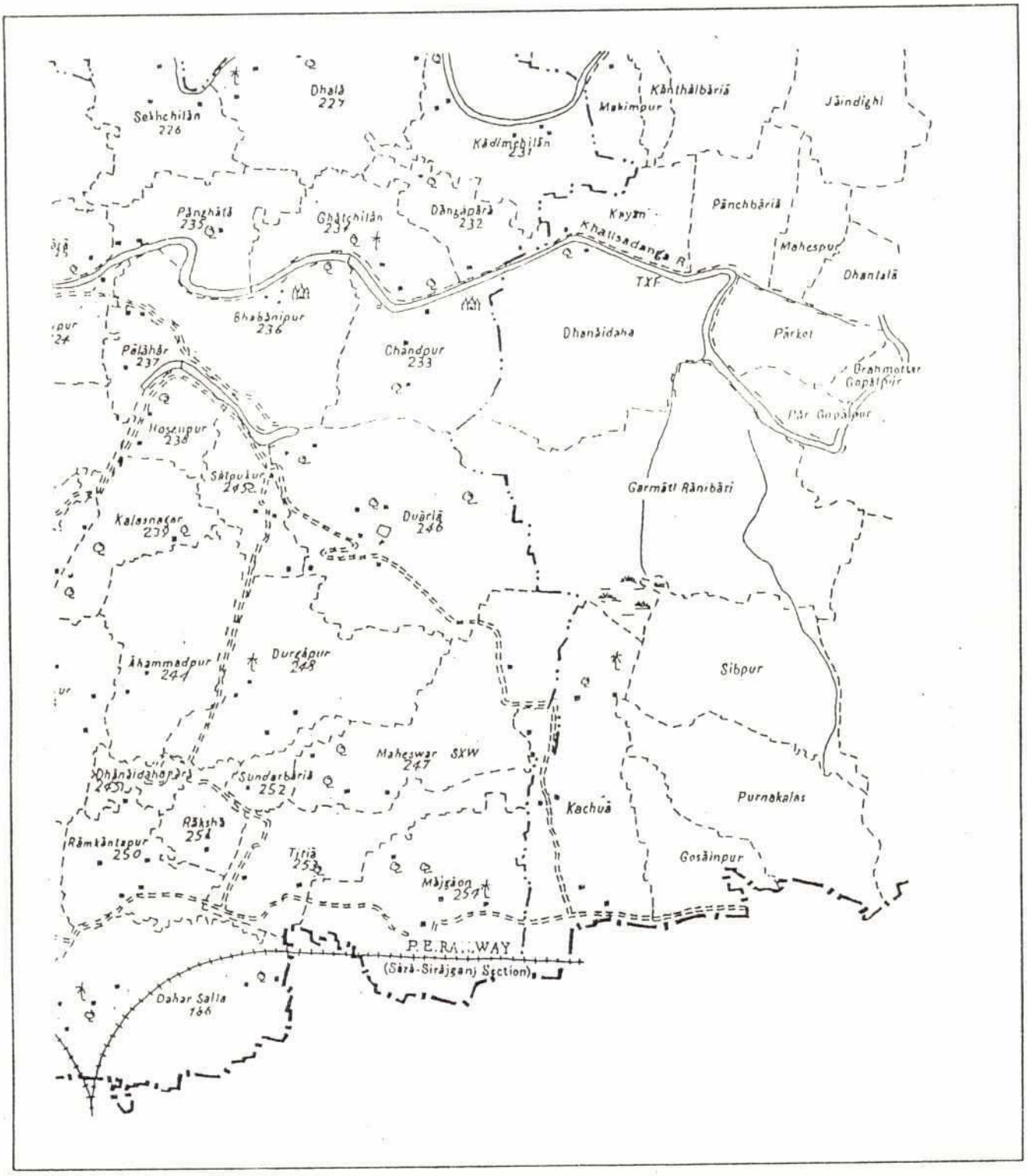


SAMPLE MAP

POLICE STATION MAP

Police Station map Directorate of Land Records (DLR) Police station maps were prepared during the first quarter of this century. Most of the present day Thanas are actually Police Stations. Each of the Police station map contains mouza boundary with river location. The Police station maps were drawn from actual survey.	
	Map name: Police Station Map
	Type of map: Administrative
	Published date: 1929
	Edition: one edition only
	Coverage: All Thanas of Present Bangladesh
	Printed by: Under authority of the Government of India
	Source: DLR office
	Output size; 77 X 63 cm or 30.5 x 25 inches
	Colour: Black and White
	Scale: 1 inches to one mile
	Procurement: Formal request to DLR&S officals (charge officer)
	Cost; 30 taka per sheet

:HAK-2:tc


Dhalā 227
Selhchilān 226
Kādimchilān 231
Kānthālbāriā
Makimpur
Jāindighi
Pānghātā 235
Ghātchilān 234
Dāngāpārā 232
Kayem
Pānchbāriā
Mahespur
Dhantalā
Khalisadanga R.
TXF
Bhabānipur 236
Chāndpur 233
Dhanāidaha
Pārkel
Brahmottar Gopālpur
Pār Gopālpur
Pālāhār 237
Hosainpur 238
Sātpukur 242
Kalasnagar 239
Duāriā 246
Garmāti Rānibāri
Āhammadpur 241
Durgāpur 248
Sibpur
Maheswar SXW 247
Dhanāidahapārā 245
Sundarbāriā 252
Kachuā
Purnakalas
Rākshā 254
Rāmkāntapur 250
Tirtiā 253
Majgaon 251
Gosāinpur
P.E.RA...WAY
(Sārā-Sirājganj Section)
Dahar Salla 166

SAMPLE MAP

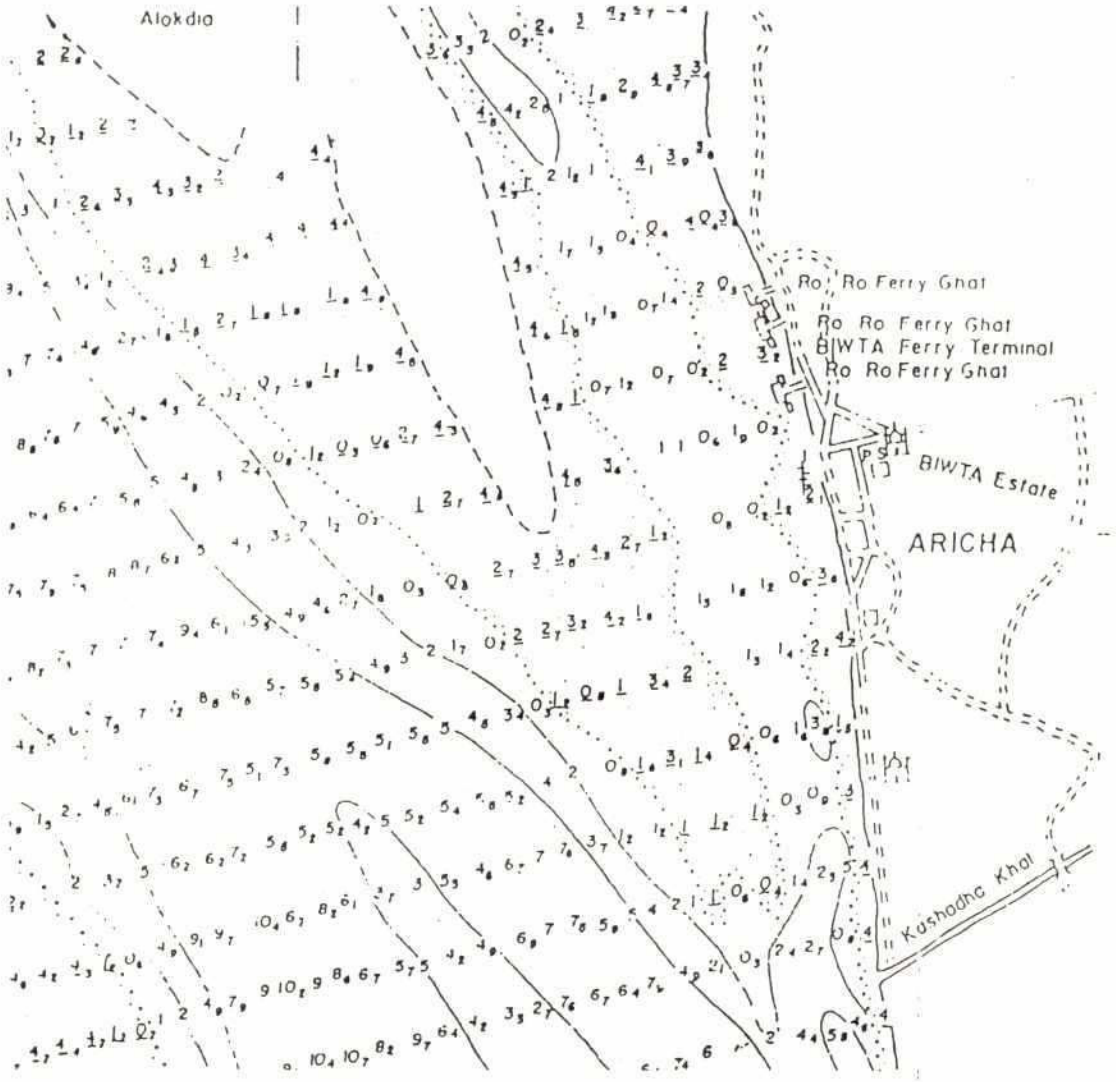
Chapter E
BATHYMETRIC CHARTS (1:25,000)

Bathymetric Charts	
Bangladesh Inland Water Transport Authority (BIWTA) BIWTA is the main organization for collection and supply of bethematric information. Every year there are regular bethematric surveys undertaken by the officers of BIWTA. For mapping of the entire coastal area on 1:10,000 scale a contract was executed between BIWTA and the National Board of Survey, Finland for execution of the works by FINNMAP under the project (Mapping for Dev. - Coastal Area - First Phase).	Map name: Bathematric map
	Type of map: Thematic
	Published date: September 198
	Survey Methods: The depth of river measured through eco-sounding method.
	Coverage: Major rivers and Navigable routes.
	Printed by: Amonia Prints from BIWTA
	Source: BIWTA
	Output size: various
	Colour: single
	Scale: 1,25,000
	Procurement: Purchasable through formal request
	Cost: 30 taka per sheet

HAK-2:tc

Appendix M

BATHYMETRIC CHARTS (1:25,000)

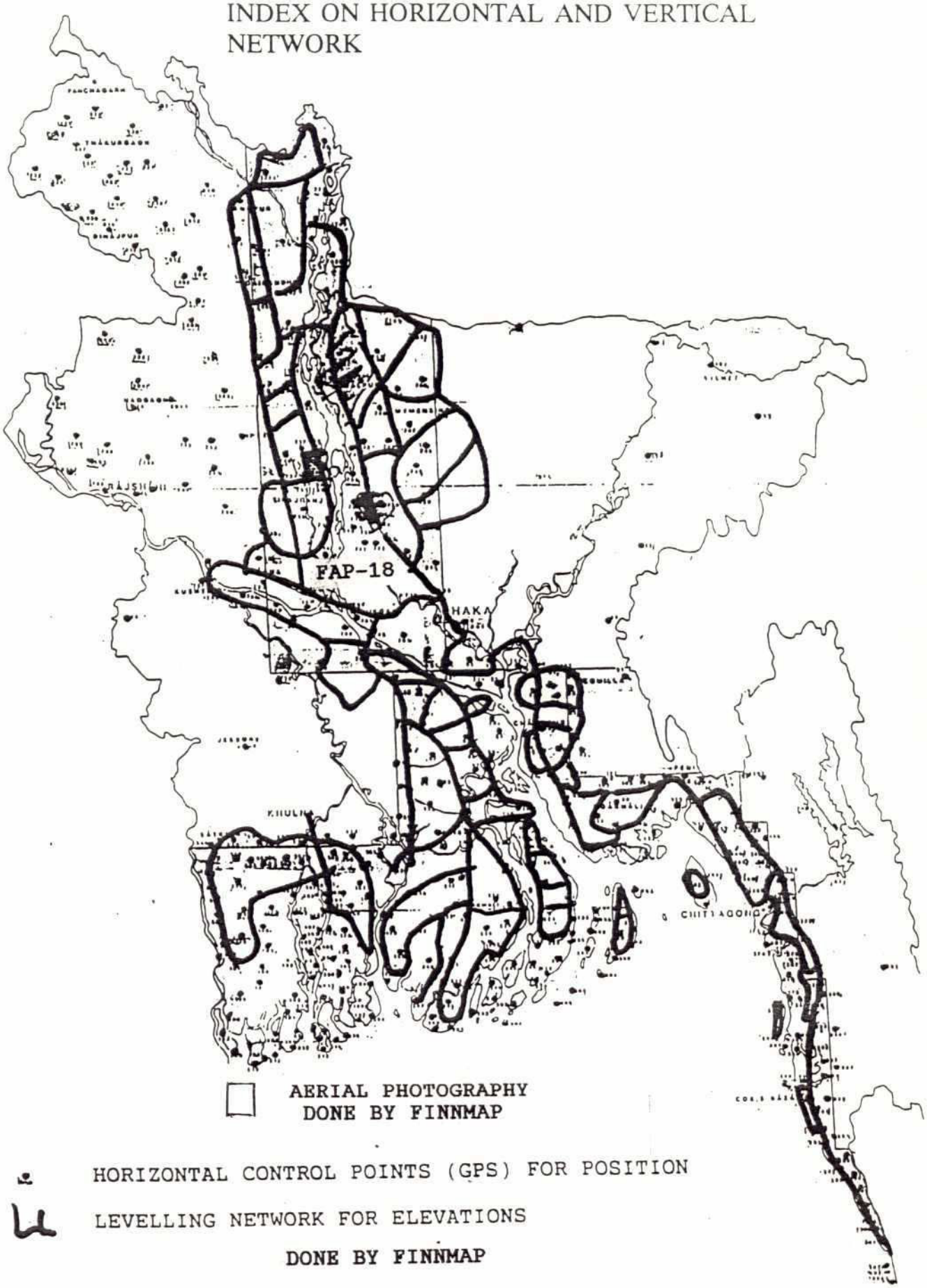


SAMPLE MAP

BANGLADESH MAPPING FOR DEVELOPMENT 1:10 000
FIRST PHASE COASTAL AREA

DDD

INDEX ON HORIZONTAL AND VERTICAL NETWORK



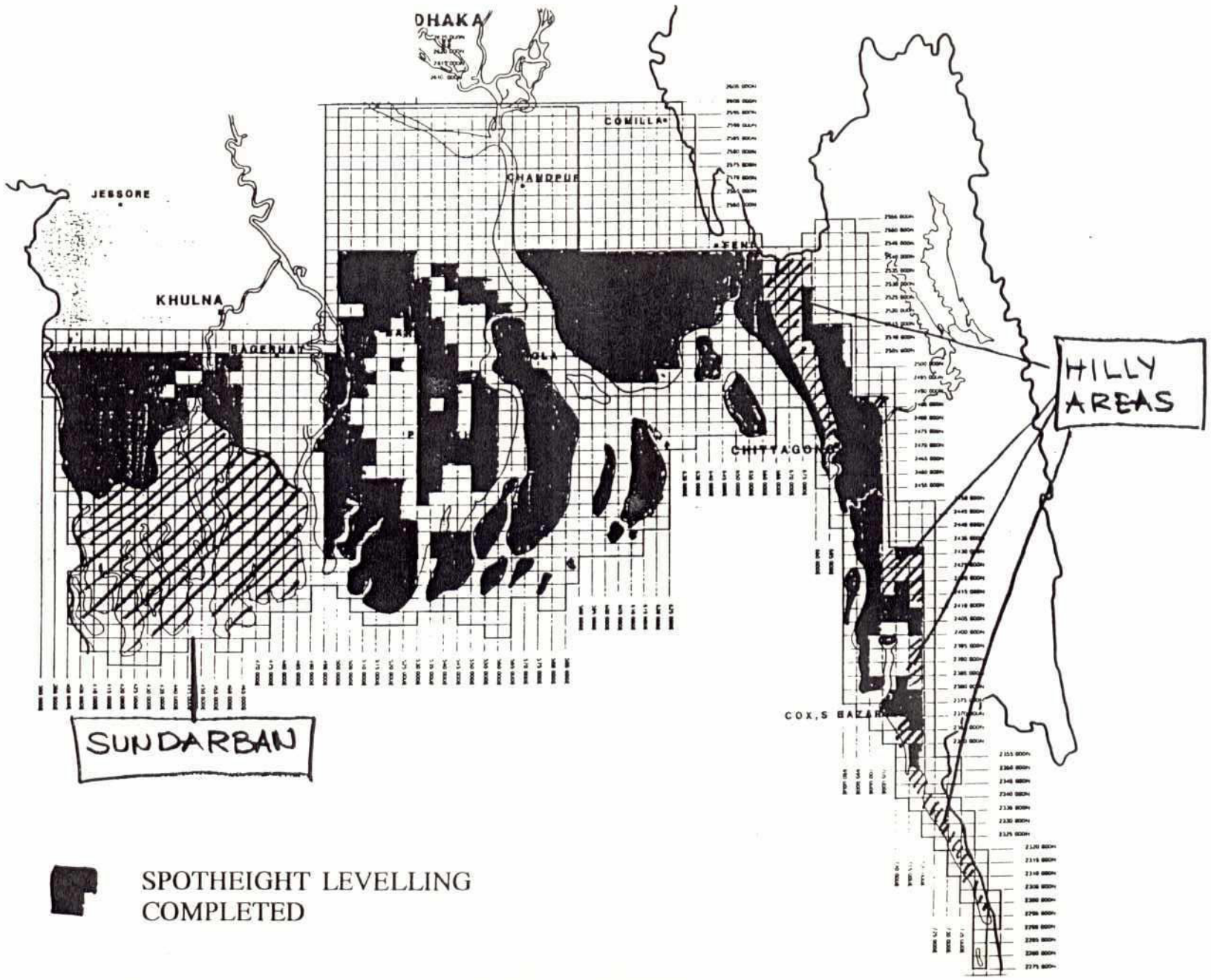
AERIAL PHOTOGRAPHY
DONE BY FINNMAP

HORIZONTAL CONTROL POINTS (GPS) FOR POSITION

LEVELLING NETWORK FOR ELEVATIONS

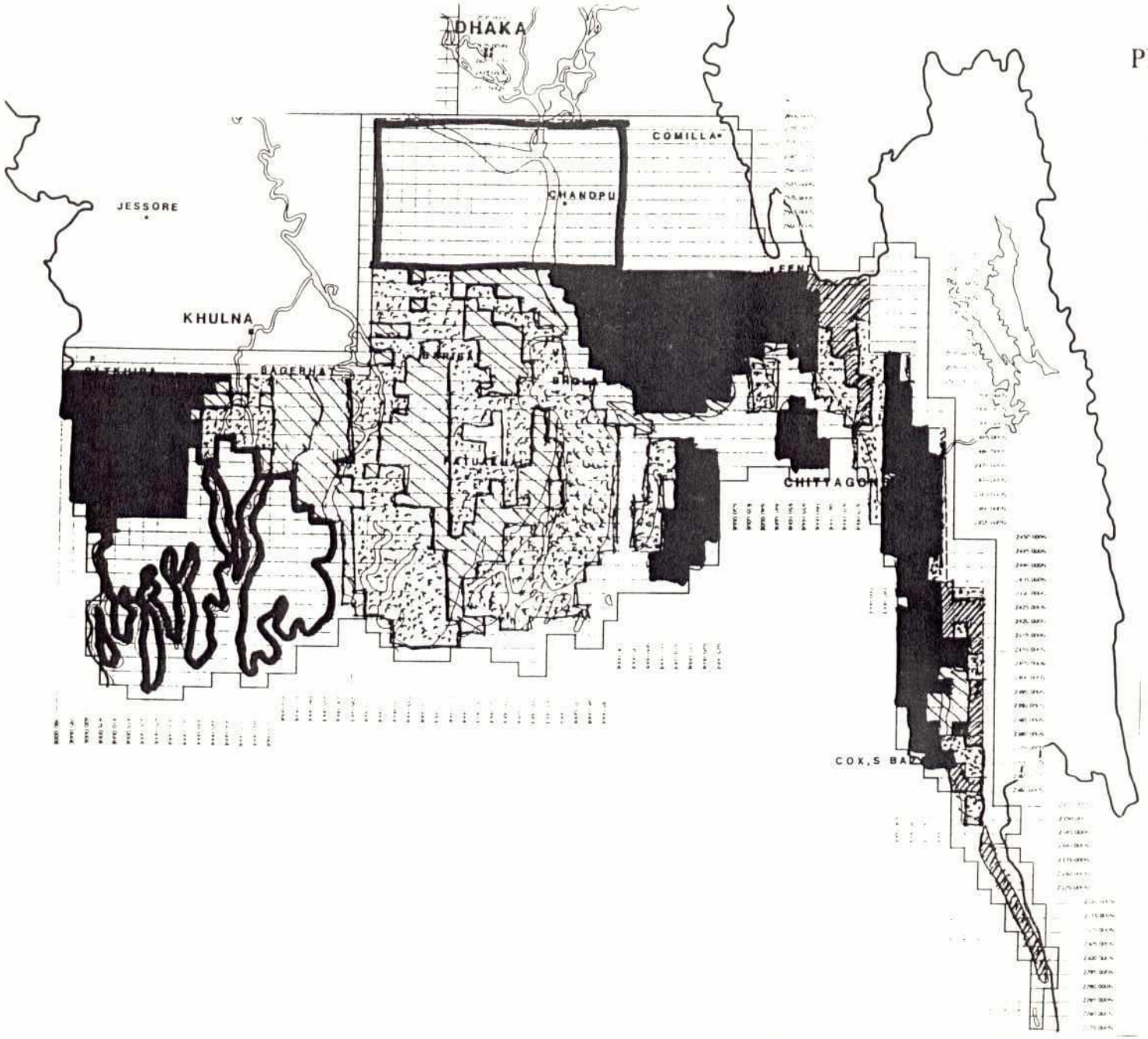
DONE BY FINNMAP

DONE BY FINNMAP



SPOTHEIGHT LEVELLING COMPLETED

FINNMAP



PROPOSED FINAL PRODUCTS

- PRINTED LINE MAP WITH 0.25 M CONTOURS
- PRINTED LINE MAP WITH 5 M CONTOURS
- PHOTOMOSAIC WITH 0.25 M CONTOURS, FIELD WORK COMPLETED
- PHOTOMOSAIC WITH 0.25 m CONTOURS, FIELD WORK TO BE DONE – COFINANCING
- PHOTOMOSAIC WITHOUT CONTOURS

Chmapter F
THANA BASE MAP (1:50,000)

Thana Base Map Local Government Engineering Department (LGED) LGED have published maps for each Thana at a scale of 1:50,000. These maps show Mouza, union,thana, district, pourashava and international boundaries, headquarters upto union level, natural features, physical, agricultural and socio-economic infrastuctures and other land use of Bangladesh.	Map name: Thana Base Map
	Type of map: Topographic
	Published date: 1992
	Edition: 1st edition
	Survey methods: Compiled from Spot Image 1989-90, Aerial photographs 1983-84, SOB Topographic Maps, Thana Maps, BBS and checked on the ground.
	Coverage: All present Thanas of Bangladesh.
	Printed by: LGED
	Source: LGED
	Output size: 83.5 cm X 59 cm
	Colour: Colour and Black and White
	Projection: Lambart Conformal Conical
	Scale: 1:50,000
	Procurement: Open for everyone
	Cost: 75 taka for B&W and 150 taka for colour

Appendix 9

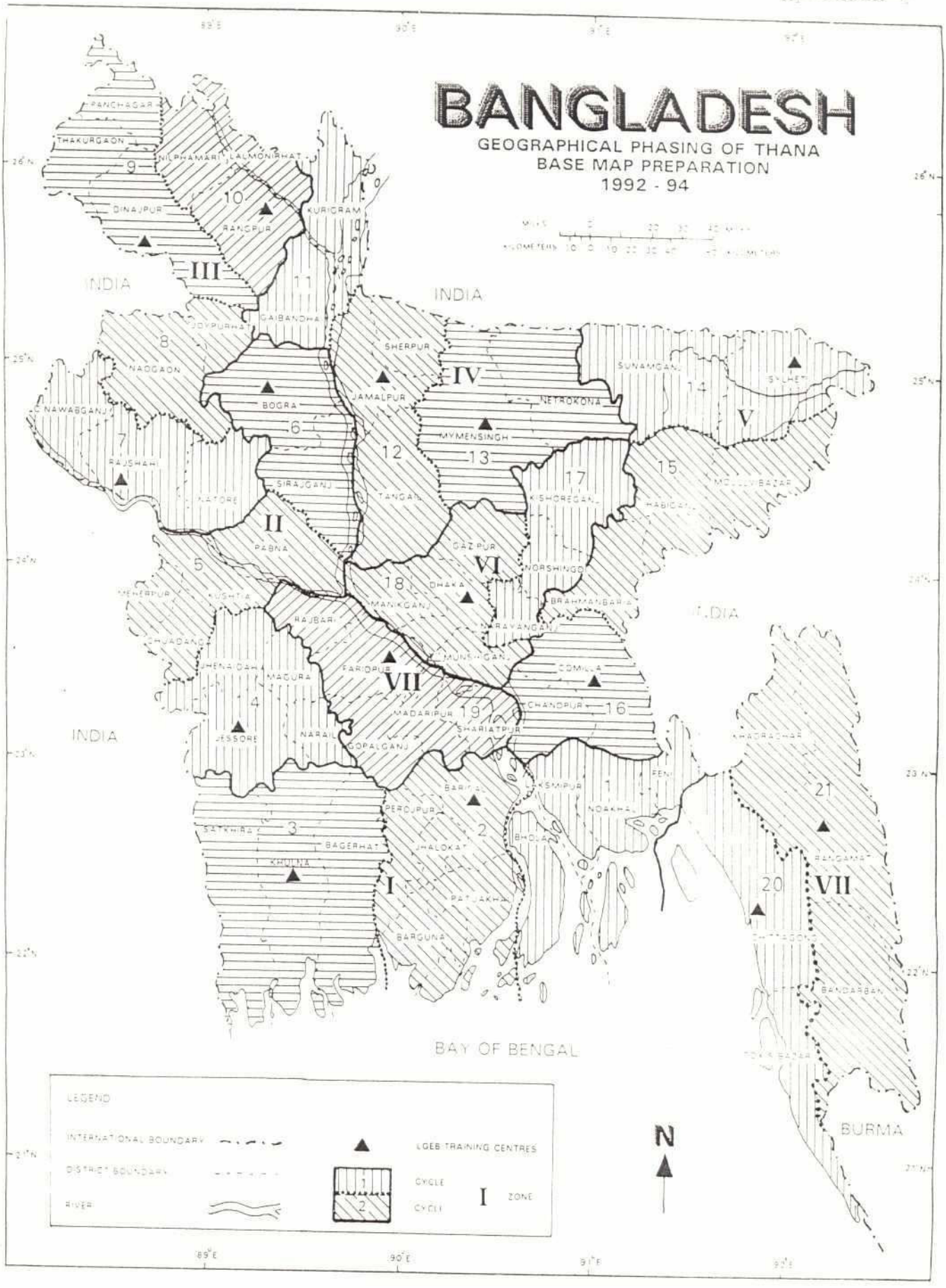

BANGLADESH
GEOGRAPHICAL PHASING OF THANA
BASE MAP PREPARATION
1992 - 94
INDIA
INDIA
INDIA
INDIA
BURMA
BAY OF BENGAL
PANCHAGAR
THAKURGAON
NILPHAMARI
LALMONIRHAT
DINAJPUR
RANGPUR
KURIGRAM
GAIBANDHA
JOYPURHAT
NAOGAON
BOGRA
SHERPUR
JAMALPUR
NETROKONA
SUNAMGANJ
SYLHET
NAWABGANJ
RAJSHAHI
NATORE
SIRAJGANJ
TANGAIL
MYMENSINGH
KISHOREGANJ
HABIGANJ
MOULVIBAZAR
PABNA
GAZIPUR
NORSHINGDI
MEHERPUR
KUSHTIA
MANIKGANJ
DHAKA
BRAHMANBARIA
RAJBARI
NARAYANGANJ
CHUADANGA
JHENAIDAHA
MAGURA
FARIDPUR
MUNSHIGANJ
COMILLA
JESSORE
NARAIL
MADARIPUR
CHANDPUR
SHARIATPUR
GOPALGANJ
LAKSMIPUR
FENI
NOAKHALI
BARISAL
SATKHIRA
PEROJPUR
BHOLA
BAGERHAT
JHALOKATI
KHULNA
PATUAKHALI
BARGUNA
CHITTAGONG
RANGAMATI
BANDARBAN
COX'S BAZAR
LEGEND
INTERNATIONAL BOUNDARY
DISTRICT BOUNDARY
RIVER
LGEB TRAINING CENTRES
CYCLE
CYCLE
ZONE
N

TABLE SHOWS STATUS OF THANA MAPS OF LGED

SL.	THANA CODE	THANA NAME	DIGITIZED	EDITED	PLOTTED
1	1	TETULIA	D	E	P
2	2	PANCHAGARH S	D	E	P
3	3	DEBIGANJ	D	E	P
4	4	BODA	D	E	P
5	5	ATWARI	D	E	P
6	6	BALIADANGI	D	E	P
7	7	THAKURGAON S	D	E	P
8	8	RANISANKAIL	D	E	P
9	9	HARIPUR	D	E	P
10	10	PIRGANJ	D	E	P
11	11	BIRGANJ	D	E	P
12	12	BOCHAGANJ	D	E	P
13	13	KAHAROL	D	E	P
14	14	KHANSHAMA	D	E	P
15	15	BIROL	D	E	P
16	16	DINAJPUR S	D	E	P
17	17	CHIRIRBANDAR	D	E	P
18	18	PARBATIPUR	D	E	P
19	19	FULBARI	D	E	P
20	20	NAWABGANJ	D	E	P
21	21	BIRAMPUR	D	E	P
22	22	HAKIMPUR	D	E	P
23	23	GHORAGHAT	D	E	P
24	24	DOMAR	D	E	P
25	25	DIMLA	D	E	P
26	26	JALDHAKA	D	E	P
27	27	NILPHAMARI S	D	E	P
28	28	KISHOREGANJ	D	E	P

SL.	THANA CODE	THANA NAME	DIGITIZED	EDITED	PLOTTED
29	29	SAYEDPUR	D	E	P
30	30	PATGRAM	D	E	P
31	31	HATIBANDHA	D	E	P
32	32	KALIGANJ	D	E	P
33	33	ADITMARI	D	E	P
34	34	LALMONIRHAT S	D	E	P
36	36	BHURUNGAMARI	D	E	P
37	37	NAGESWARI	D	E	P
38	38	KURIGRAM S	D	E	P
39	39	RAJARHAT	D	E	P
409	40	ULIPUR	D	E	P
41	41	CHILMARI	D	E	P
43	43	RAJIBPUR	D	E	P
44	44	PIRGACHA	D	E	P
45	45	KAUNIA	D	E	P
46	46	GANGACHARA	D	E	P
47	47	BADARGANJ	D	E	P
48	48	RANGPUR S	D	E	P
49	49	TARAGANJ	D	E	P
50	50	MITHAPUKUR	D	E	P
51	51	PIRGANJ	D	E	P
52	52				
		SUNDARGANJ	D	E	P
53	53	SADULLAPUR	D	E	P
54	54	PALASHBARI	D	E	P
55	55	GAIBANDHA S	D	E	P
56	56	FULCHARI	D	E	P
57	57	SAGHATA	D	E	P

SL.	THANA CODE	THANA NAME	DIGITIZED	EDITED	PLOTTED
58	58	GOBINDAGANJ	D	E	P
59	59	PANCHBIBI	D	E	P
60	60	JOYPURHAT S	D	E	P
61	61	KHETLAL	D	E	P
62	62	AKKELPUR	D	E	P
63	63	KALAI	D	E	P
64	64	BOGRA S	D	E	P
65	65	SARIAKANDI	D	E	P
66	66	DHUPCHANCIA	D	E	P
67	67	SHIBGANJ	D	E	P
68	68	DHUNOT	D	E	P
69	69	SONATALA	D	E	P
70	70	GABTALI	D	E	P
71	71	NANDIGRAM	D	E	P
72	72	SHERPUR	D	E	P
73	72	KAHALOO	D	E	P
74	74	ADAMDIGHI	D	E	P
75	75	SERAJGANJ S	D	E	P
76	76	SHAHZADPUR	D	E	P
77	77	RAIGANJ	D	E	P
78	78	TARASH	D	E	P
79	79	BELKUCHI	D	E	P
80	80	ULLAPARA	D	E	P
81	81	KAZIPUR	D	E	P
82	82	CHOWHALI	D	E	P
83	83	KAMARKHAND	D	E	P
84	84	PABNA S	D	E	P
85	85	ISHWARDI	D	E	P

SL.	THANA CODE	THANA NAME	DIGITIZED	EDITED	PLOTTED
86	86	CHATMOHAR	D	E	P
87	87	SUJANAGAR	D	E	P
88	88	BERA	D	E	P
89	89	FARIDPUR	D	E	P
90	90	ATGHORIA	D	E	P
91	91	SANTHIA	D	E	P
92	92	BHANGURA	D	E	P
93	93	NATORE S	D		
94	94	SINGRA	D	E	P
95	95	LALPUR	D	E	P
96	96	BAGATIPARA	D	E	P
97	97	BARAIGRAM	D	E	P
98	98	GURUDASPUR	D		
99	99	NAOGAON S	D	E	P
100	100	PATNITALA	D	E	P
101	101	MOHADEVPUR	D	E	P
102	102	PORSHA	D	E	P
103	103	MANDA	D	E	P
104	104	DHAMOIRHAT	D	E	P
105	105	SHAPAHAR	D	E	P
106	106	ATRAI	D	E	P
107	107	NIAMATPUR	D	E	P
109	109	BADALGACHI	D	E	P
110	110	NAWABGANJ S	D	E	P
111	111	SHIBGANJ	D	E	P
112	112	GOMOSTAPUR	D	E	P
113	113	BHOLAHAT	D	E	P
114	114	NACHOL	D	E	P

SL.	THANA CODE	THANA NAME	DIGITIZED	EDITED	PLOTTED
115	115	PUTHIA	D	E	P
116	116	BAGMARA	D	E	P
117	117	MOHANPUR	D		
118	118	CHARVHAT	D	E	P
119	119	TANORE	D	E	P
120	120	DURGAPUR	D	E	P
121	121	BAGHA	D	E	P
122	122	PABA	D	E	P
123	123	GODAGARI	D	E	P
124	124	KUSHTIA S	D	E	P
125	125	DAULATPUR	D	E	P
126	126	KUMARKHALI	D	E	P
127	127	KHOKSHA	D	E	P
128	128	MIRPUR	D	E	P
129	129	BHERAMERA	D	E	P
130	130	MEHERPUR S	D	E	P
131	131	GANGNI	D	E	P
132	132	GHUADANGA S	D	E	P
133	133	ALAMDANGA	D	E	P
134	134	DAMURHUDA	D	E	P
135	135	JIBAN NAGAR	D	E	P
136	136	JHENAIDAHA	D	E	P
137	137	SHAILKUPA	D	E	P
138	138	HARINAKUNDA	D	E	P
139	139	MOHESHPUR	D	E	P
140	140	KOTCHANDPUR	D	E	P
141	141	KALIGANJ	D	E	P

SL.	THANA CODE	THANA NAME	DIGITIZED	EDITED	PLOTTED
142	142	MAGURA S	D	E	P
143	143	SALIKHA	D	E	P
144	144	SREEPUR	D	E	P
145	145	MOHAMMADPUR	D	E	P
146	146	NARAIL S	D	E	P
147	147	KALIA	D	E	P
148	148	;PJAGARA	D	E	P
149	149	JESSORE S	D	E	P
150	150	KESHABPUR	D	E	P
151	151	CHOWGACHA	D	E	P
152	152	MONIRAMPUR	D	E	P
153	153	SARSHA	D	E	P
154	154	ABHOYNAGAR	D	E	P
155	155	BAGHERPARA	D	E	P
156	156	JHIKARGACHA	D	E	P
157	157	SATKHIRA S	D		
158	158	SHYAMNAGAR	D		
159	159	TALA	D		
160	160	ASSASUNI	D	E	P
161	161	DEBHATA	D	E	P
162	162	KALIGANJ	D		
163	163	KALAROA	D		
164	164	PAIKGACHA	D	E	P
165	165	BATIAGHATA	D	E	P
166	166	TEROKHADA	D	E	
167	167	DUMURIA	D		
168	168	PHULTALA	D	E	P
169	169	DACOPE	D	E	P

SL.	THANA CODE	THANA NAME	DIGITIZED	EDITED	PLOTTED
170	170	RUPSHA	D	E	
172	172	KORIA	D	E	
173	173	BAGERHAT S	D	E	
175	175	SHARANKOHOLA	D		
176	176	RAMPAL	D		
177	177	FAKIRHAT	D	E	
178	178	MOLLAHAT	D	E	
179	179	MONGLA	D		
180	180	KACHUA	D		
181	181	CHITALMARI	D		
182	182	BARGUNA S	D	E	P
183	183	AMTALI	D	E	P
184	184	PATHARGHATA	D	E	P
185	185	BAMNA	D	E	P
186	186	BETAGI	D	E	P
187	187	PATUAKHALI S	D	E	P
188	188	KALAPARA	D	E	P
189	189	GALACHIPA	D	E	P
190	190	BAUPHAL	D	E	P
191	191	MIRZAGANJ	D	E	P
192	192	DASMINA	D	E	P
193	193	BHOLA S	D	E	P
194	194	CHARFASSION	D		
195	195	TAZUMUDDIN	D	E	
196	196	LALMOHAN	D	E	P
197	197	BORHANUDDIN	D		
198	198			E	
199	199	DAULATKHAN	D	E	

SL.	THANA CODE	THANA NAME	DIGITIZED	EDITED	PLOTTED
200	200	BARISAL S	D	E	P
201	201	GOURANADI	D	E	P
202	202	BAKERGANJ	D	E	P
203	203	MULADI	D	E	P
204	204	BABUGANJ	D	E	P
205	205	MEHENDIGANJ	D	E	P
206	206	HIZLA	D	E	P
207	207	UZIRPUR	D	E	P
208	208	AGAILJHARA	D	E	P
209	209	JHALOKATHI S	D	E	P
210	210	KATHALIA	D	E	P
211	211	RAJAPUR	D	E	P
212	212	NALCHHITI	D	E	P
213	213	PEROJPUR S	D	E	P
214	214	MOTHBARIA	D	E	P
215	215	BANARIPARA	D	E	P
216	216	BHANDARIA	D	E	P
217	217	NAZIRPUR	D	E	P
218	218	NESARABAD	D	E	P
219	219	KAUKHALI	D	E	P
225	225	MADARIPUR S	D		
226	226	RAJOIR	D		
227	227	SHIBCHAR	D		
228	228	KALKINI	D		
229	229	SHARIATPUR S	D		
239	230	DAMUDDYA	D		
231	231	JANJIRA	D	E	P
232	232	NARIA	D		

SL.	THANA CODE	THANA NAME	DIGITIZED	EDITED	PLOTTED
233	233	BHEDARGANJ	D		
235	235	FARIDPUR S	D	E	P
236	236	SADARPUR	D	E	P
237	237	ALFADANGA	D	E	P
238	238	NAGARKANDA	D	E	P
239	239	BHANGA	D	E	P
241	241	BOALMARI	D	E	P
242	242	MADHUKHALI	D	E	P
243	243	RAJBARI S	D	E	P
244	244	PANGSHA	D	E	P
245	245	BALIAKANDI	D		
246	246	GOALANDA	D	E	P
247	247	MANIKGANJ S	D	E	P
248	248	SHIVALAYA	D	E	P
249	249	SINGARI	D	E	P
250	250	HARIRAMPUR	D	E	P
251	251	DAULATPUR	D	E	P
252	252	SATURIA	D	E	P
253	253	GOPR	D	E	P
254	254	DHAMRAI	D	E	P
255	255	DOHAR	D	E	P
256	256	SAVAR	D	E	P
257	257	NAWABGANJ	D	E	P
258	258	KERANIGANJ	D	E	P
259	259	MUNSHIGANJ S	D	E	P
260	260	SIRAJDIKHAN	D	E	P
261	261	LAUHAJONG	D	E	P
262	262	GAZARIA	D	E	P

SL.	THANA CODE	THANA NAME	DIGITIZED	EDITED	PLOTTED
263	263	SREENAGAR	D	E	P
264	264	TONGIBARI	D		
265	265	NARAYANGANJ S	D		
266	266	SONARGAON	D	E	P
267	267	RUPGANJ	D	E	P
268	268	ARAIHAZAR	D		
269	269	BANDAR	D		
270	270	NARSHINGDI S	D		
271	271	RAIPURA	D	E	P
272	272	MONOHARDI	D	E	P
273	273	PALASH	D	E	P
274	274	SHIBPUR	D	E	P
275	275	BELABO	D	E	P
276	276	GAZIPUR S	D	E	P
277	277	KAPASIA	D	E	P
278	278	KALIGANJ	D	E	P
279	279	SREEPUR	D		
280	280	KALIAKOIR	D	E	P
282	282	TANGAIL S	D	E	P
282	282	MIRZAPUR	D	E	P
283	283	GHATAIL	D	E	P
284	284	BHUAPUR	D	E	P
285	285	MADHUPUR	D	E	P
286	286	BASAIL	D	E	P
287	287	GOPALPUR	D	E	P
288	288	KALIHATI	D	E	P
289	289	SHAKHIPUR	D	E	P
290	290	NAGARPUR	D	E	P

SL.	THANA CODE	THANA NAME	DIGITIZED	EDITED	PLOTTED
291	291	DELDUAR	D	E	P
292	292	JAMALPUR S	D	E	P
293	293	SARISHABARI	D	E	P
294	294	DEWANGANJ	D	E	P
295	295	MELENDAH	D	E	P
296	296	ISLAMPUR	D	E	P
297	297	BAKSHIGANJ	D	E	P
298	298	MADARGANJ	D	E	P
299	299	SHERPUR S	D	E	P
300	300	SREEBORDI	D	E	P
301	301	NALITABARI	D	E	P
302	302	NAKLA	D	E	P
303	303	JHENAIGATI	D	E	P
304	304	MYMENSHINGH S	D	E	P
305	305	ISHWARGANJ	D		
306	306	GAFFARGAON	D	E	P
307	307	GOURIPUR	D		
308	308	NANDAIL	D	E	P
309	309	FULBARIA	D		
310	310	TRISHAL	D	E	P
311	311	BHALUKA	D	E	P
312	312	PHULPUR	D		
313	313	HALUAGHAT	D	E	P
315	315	KISHOREGANJ-S	D	E	P
316	316	NIKLI			
			D	E	P
317	317	KULIARCHAR	D	E	P
318	318	BHAIRAB	D	E	P

SL.	THANA CODE	THANA NAME	DIGITIZED	EDITED	PLOTTED
319	319	AUSTOGRAM	D	E	P
320	320	BAJITPUR	D		
321	321	KATIADI	D	E	P
322	322	TARAIL	D	E	P
323	323	HOSSAINPUR	D	E	P
324	324	PAKUNDIA	D	E	P
325	325	ITNA	D	E	P
326	326	MITHAMOIN	D	E	P
327	327	KARIMGANJ	D	E	P
328	328	NETROKONA-S	D	E	P
329	329	KENDUA	D	E	P
330	330	MOHANGANJ	D		
331	331	DURGAPUR	D	E	P
333	333	KALMAKANDA	D	E	P
334	334	ATPARA	D	E	P
335	335	BARHATTA		D	
336	336	PURBADHALA	D		
337	337	DHOBAURA	E		
339	339	DHARMAPASHA	D		
340	340	SULLA	D	E	P
341	314	DERAI	D		
342	342	JAMALGANJ	D		
343	343	TAHIRPUR	D		
344	344	BISWAMVAPUR	D		
345	345	SUNAMGANJ-S	D		
346	346	DOARABAZAR	D		
347	347	CHATAK	D		
348	348	JAGANNATHPUR	D		

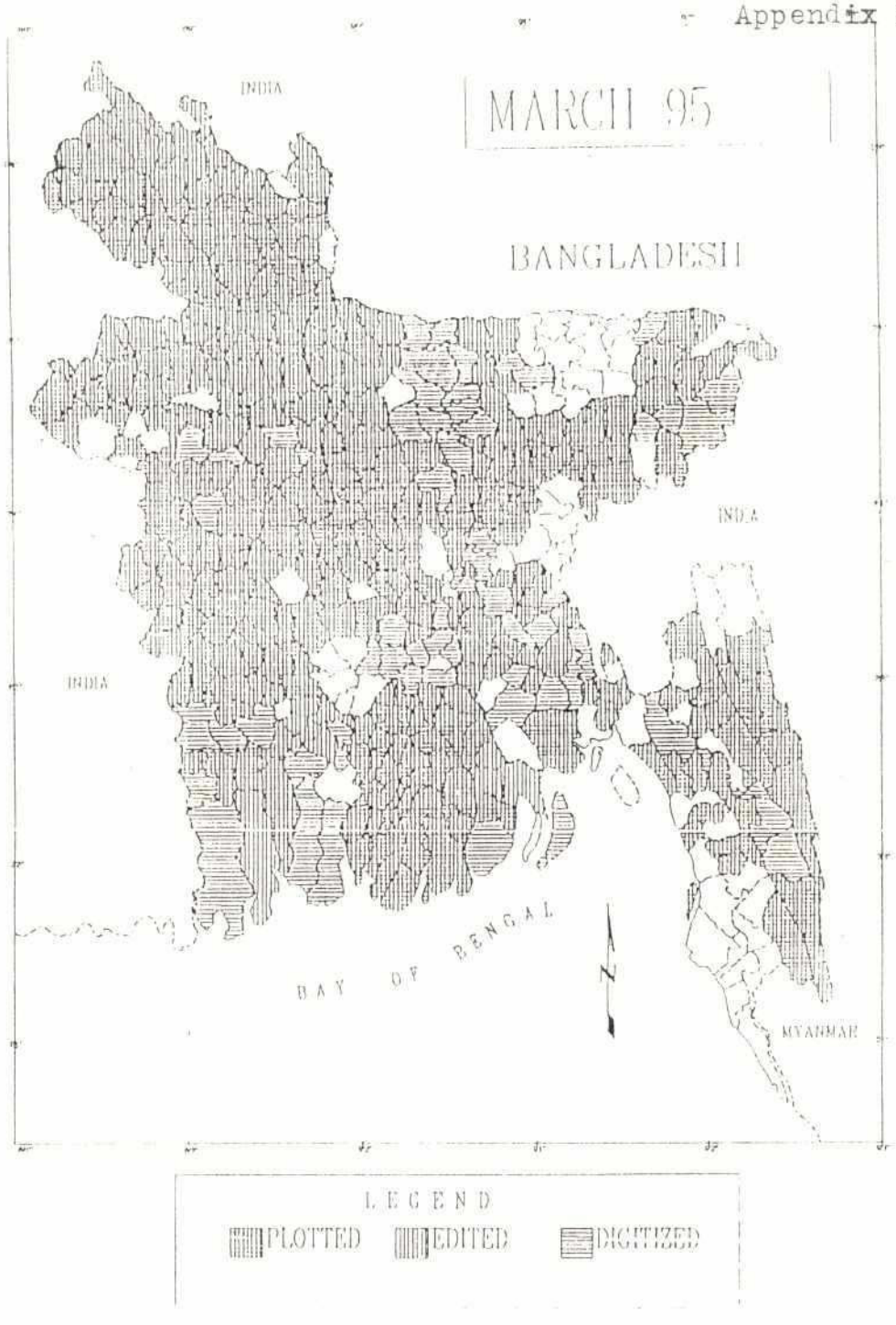
SL.	THANA CODE	THANA NAME	DIGITIZED	EDITED	PLOTTED
349	349	BALAGANJ	D	E	P
350	350	BISWNATH	D	E	P
351	351	SYLHET-S	D	E	P
352	352	COMPANYGANJ	D	E	P
353	353	GOWANJNGHAT	D	E	P
354	354	JOINTIAPUR	D	E	P
355	355	KANAIRGHAT	D		
356	356	ZAKIGANJ	D	E	P
357	357	BEANIBAZAR	D	E	P
358	358	GOLAPGANJ	D	E	P
359	359	FENCHUGANJ	D	E	P
360	360	BARLEKHA	D		
361	361	KULAURA	D		
362	662	RAJNAGAR	D		
363	363	KAMALGANJ	D	E	P
364	364	MOULVIBAZAR S	D		
366	366	NABIGANJ	D	E	P
367	367	BANIACHONG	D	E	P
368	368	AZMIRIGANJ	D	E	P
369	369	LAKHAI	D	E	P
370	370	HABIGANJ S	D	E	P
371	371	BAHUBAL	D	E	P
372	372	CHUNARUGHAT	D	E	P
373	373	MADHABPUR	D	E	P
374	374	NASIRNAGAR	D		
375	375	SARAIL	D		
376	376	BRAHMANBARIA S	D	E	P
377	377	AKHAURA	D		

SL.	THANA CODE	THANA NAME	DIGITIZED	EDITED	PLOTTED
378	378	KASBA	D	E	P
379	379	NABINAGAR	D	E	
380	380	BANCHARAMPUR	D		
381	381	HOMNA	D	E	P
382	382	MURADNAGAR	D	E	P
383	383	DAUDKANDI	D		
384	384	DEBIDWAR	D	E	P
385	385	BRAJIMANPARA	D	E	P
386	386	BURICHONG	D		
387	387	COMILLA S	D	E	P
388	388	CHOUDDAGRAM	D		
389	389	NANGALKOT	D		
390	390	LAKSHAM	D	E	P
391	391	BARURA	D		
392	392	CHANDINA	D	E	P
393	393	KACHUA	D		
394	394	MATLAB	D	E	P
395	395	CHANDPUR S	D	E	P
396	396	HAZIGANJ	D	E	P
397	397	SHAHRASTI	D	E	P
398	398	FARIDGANJ	D	E	P
399	399	HAIMCHAR	D	E	P
401	401	RAMGANJ	D		
402	402	LAXMIPUR S	D		
404	404	HATIYA	D		
405	405	NOAKHALI S	D	E	P
406	406	BEGUMGANJ	D	E	P
407	407	CHATKHIL	D	E	P

SL.	THANA CODE	THANA NAME	DIGITIZED	EDITED	PLOTTED
408	408	SENBAG	D		
409	409	COMPANIGANJ	D	E	P
410	410	SONAGAZI	D	E	P
411	411	DAGANBHUIYAN	D	E	P
412	412	FENI S	D	E	P
413	413	PORSHURAM	D	E	P
414	414	CHHAGALNIYA	D	E	P
416	416	SANDWIP	D		
417	417	SITAKUNDA	D	E	P
418	418	FATIKCHARI	D		
419	419	HATHAZARI	D	E	P
420	420	RAOJAN	D	E	P
421	421	RANGUNIA	D	E	P
428	428	BANSKHALI	D	E	P
423	423	PATIYA	D	E	P
424	424	ANWARA	D	E	P
426	426	SATKANIA	D	E	P
427	427	LOHAGARA	D	E	P
422	422	BOALKHALI	D	E	P
430	430	ALIKANDAM	D	E	P
432	432	THANCHI	D	E	P
433	433	RUMA	D		
434	434	ROWANGCHARI	D		
435	435	BANDARBAN S	D	E	P
436	436	RAJOSTHALI	D		
437	437	KAPTAI	D	E	P
438	438	KAUKHALI	D		
439	439	RANGAMATI S	D	E	P

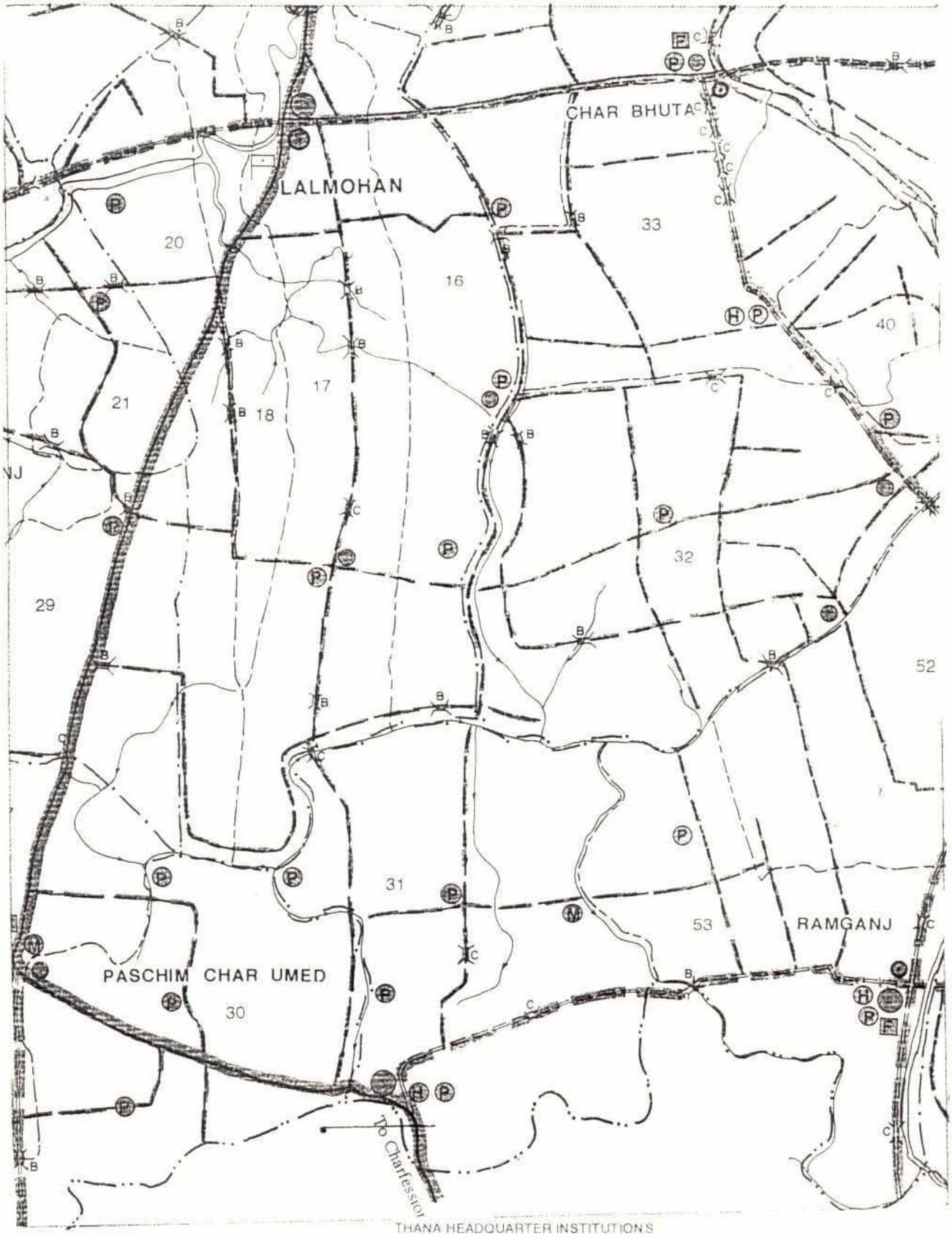
SL.	THANA CODE	THANA NAME	DIGITIZED	EDITED	PLOTTED
440	440	BELAICHARI	D	E	P
441	441	JURAICHARI	D	E	P
442	442	BARKAL	D	E	P
443	443	LANGADU	D	E	P
444	444	NANNIARCHAR	D	E	P
445	445	BAGHAICHARI	D	E	P
446	446	KHAGRACHARI S	D	E	P
447	447	MAHALCHARI	D	E	P
448	448	LAKSMICHARI	D	E	P
450	450	RAMGARH	D	E	P
451	451	MATIRANGA	D	E	
452	452	PANCHARI	D	E	P
453	453	DIGHINALA	D		
454	454	KUTUBDIA	D	E	P
456	456	MOHESKHALI	D		
457	457	COX'S BAZAR S	D	E	P
458	458	RAMU	D	E	P
459	459	UKHIYA	D	E	
460	460	TEKNAF	D		
171	171	DIGHOLIA	D		

C:HAK-8:tc

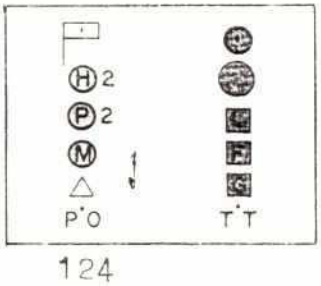


Map shows digitization status of Thana Base Maps, March 1995

THANA LALMOHAN



THANA HEADQUARTER INSTITUTIONS



SCALE

METERS 1000 0 1 2 3 KILOMETERS

YARDS 1000 0 1 2 MILES

R. F. 1 : 50,000

MAUZA NAME	J.L.No.	*Geo-Code No.*	MAUZA NAME	J.L.No.	*Geo-Code No.*
FARAZGANJ UNION		***38***	**PASCHIM CHARUMED UNION**		***85***
Asali Lalmohan	21	*091*	Kachuakhali	25	*581*
Kishoreganj	22	*688*	Pangasia	26	*857*
Farazganj	23	*505*	Gazaria	27	*535*
Maheshkhali	29	*765*	Paschim Char Umed	30	*872*
KALMA UNION		***47***	**RAMGANJ UNION**		***76***
Lej Chhakina	11	*750*	Ramganj	31	*918*
Char Kalidas	12	*275*	Purbba Char Umed	52	*903*
Kalma	13	*627*	Raychand	53	*933*
Char Lakshmi	14	*321*			
Balur Char	15	*137*			
Char Chhakina	19	*260*			
LALMOHAN UNION		***57***			
Char Lalmohan	16	*336*			
Meherganj	17	*780*			
Munsir Hawla	18	*795*			
Peshker Hawla	20	*887*			

LEGEND

Boundaries

International
District
Thana
Union
Mouza
Urban Area/Pourashava

Headquarters

District
Thana
Union
Police Station

Natural Features

River with Char area
Khal
Water bodies, Beel/Haor/Baor
Tank/Pond
Forest
Hill/Hillock

Physical Infrastructure

National, Regional Highway
Feeder Road (Type A)
Feeder Road (Type B) Pucca
Feeder Road (Type B) Katcha
Pourashava/Local/Rural Pucca Road (R-1, R-2, R-3)
Pourashava/Local/Rural Katcha Road (R-1, R-2, R-3)
Railway with station, Broad/ Metre gauge/ Double track
Launch/Steamer route
Telecommunication
Transmission Line

Bus Stop Passenger Shed	
Bridge/Culvert	B / C
Ferry, Launch, Steamer Ghat	FG / LG / SG
Sea port, Airport, Helipad	SP / AP / HP

Agricultural Infrastructure

Embankment	
Road cum Embankment	
Deep Tubewell/Shallow/L.L.P	Ⓓ / Ⓢ / Ⓛ
Sluice / Regulator	

Socio-Economic Infrastructure

Growth Centre	
Hat/Bazar	
Hospital/Thana Health Complex	
Family Planning Centre	
Bank	
Post Office / Telegraph Office	PO / TT
Historical Place/ Tourist Spot	
University	Ⓤ
College/Technical & Vocational Institute	Ⓒ
High School	Ⓗ
Primary School	Ⓟ
Madrasha	Ⓜ
Mosque	△
Food Godown	

Compiled from : SPOT Image 1989-90, Aerial Photograph 1983-84, Topographic Maps, Thana Maps, B.B.S. and field Checking.

Projection : Lambert's Conformal Conic

LOCAL GOVERNMENT ENGINEERING DEPARTMENT

UNDP/ILO PROJECT BGD/89/041

1992

SPACE RESEARCH & REMOTE SENSING ORGANIZATION (SPARRSO)

Using Satellite imagery SPARRSO produced administrative maps as well as a number of thematic maps.

Table shows a list of maps produced by SPARRSO

Name of map	Year of Production	Scale	Total sheet	Remark
Forest Cover Map of Chittagong hill Tract Area	1979	1;200,000		
Karnafuli Reservoir and its Watershed area	1979	1;200,000		
Landuse & Forest cover map of watershed area of Karnafuli Reservoir	1979	1:200,000		
Water pools in the Ganges Basin area	1979	1;200,000	2	
Saline zone in South West Bangladesh (Salinity intrusion of South West of Khulna)				

Name of the Map	Year of Production	Scale	Total Sheet	Remark
Landsat Colour Map (Forest Area)	1990	1:1,000,000	4	Reprint
Landuse Map	1992-93	1:1,000,000	1	Gaibandha
Landuse Map	1992-93	1:25,000	9	Srinagar, Phulthala, Tangail, Kaharul, Mohanpur, Ishwardi, Barguna, Moulvibazar, Begumganj and Hathazari
Change Dictation Map (1973-1090) a. Jamuna-Brahmaputra-Tista b. Ganges-Jamuna c. Padma-Meghna	 1993 1993 1993	 1:250,000 1:250,000 1:250,000	 14 7 7	
Bankline Shift Map a. Brahmaputra b. Char Badrashan		 1:50,000 1:50,000 1:50,000	 1 1 1	
Water Bodies Map a. Sylhet b. Jessore c. Nator	 1992-93 1992-93 1992-93	 1:50,000 1:50,000 1:50,000	 12	
Water Bodies Inventory Map a. Sunamganj b. Kurigram c. Kishorganj	 1989-90 1989-90 1989-90	 1:50,000 1:50,000 1:50,000	 3	
Land Degradation Map of Nachal Thana	1992	1:50,000	1	

Name of the Map	Year of Production	Scale	Total Sheet	Remark
Map of Percent Area of Upazila Covered by Shrimp Farm	1988	1:1,000,000		
Landuse Classification Map of Jamuna Fertilizer Factory and its Surrounding Area		1:50,000		
Landuse Map of Kurigram Upazila	1988	1:50,000		
VHF Communication Map (Landuse Classification)	1988	1:50,000		
Location Map of Kulshi, Banskhali and Cox's Bazar	1988	1:10,000		
Major River and their catchment area of Bangladesh and its Surrounding	1988	1:1,000,000		
Coastal Area of Bangladesh	1988	1* = 3 miles		
Flood Map of Bangladesh	1988	1:1,000,000		
Landuse Classification Map of Greater Dhaka City	1989	1:50,000		
Madhupur Forest Tract (Arankhola Union)	1989	1:50,000		
Map of the Maiskhali Beach Sand Exploitation Project Area	1989	1:10,000		Landuse, Salt and Shrimp farm
Map of Maiskhali Heavy Mineral Deposits	1989	1:50,000		Landuse Classification
Mean Annual Rainfall of Bangladesh	1979	1:1,000,000		
Contour Map of Bangladesh	1989	1:50,000		
Map of Predator Research Site at Sripur	1989	1:10,000		
Map of Matlab Upazila (part)	1989	1:50,000		
Landuse Classification Map of Mouchak Area	1990	1:4,000 1:10,000		
Union Map of Bangladesh	1989-90	1:250,000	3	
Landuse Map of Dhaka City (Colour Print)	1989	1:25,000		
Administrative Unit Map of Bangladesh (Colour Print)	1990	1:1,000,000		
Landsat Colokur Map (Major Cover Type)	1990	1:1,000,000		Reprint
Landsat Colour Map (Land Zone and Land System)	1990	1:1,000,000	2	Reprint
Landsat Colour Map (Landuse Type)	1990	1:1,000,000	3	Reprint

c:HAK-5;tc

Name of the Map	Year of Production	Scale	Total Sheet	Remark
Seasonal Changes in Inland Water Pools	1987	1:250,000		
Seasonal Changes in Karnafuli Reservoir	1987	1:250,000		
Landuse Classification of Niamatpur Upazila	1987	1:50,000		
Landuse Map of Dhaka and its Surrounding Area	1987	1:98,000		
Landuse Map of Dhaka, Munshiganj and Shariyal Area	1987	1:98,000		
Coastal Zone Map	1987	1:125,000		Chittagong, Noakhali, Patuakhali and Bhola
Change Detection Map of Coastal Area	1987	1:125,000	9	Erosion and Accretion
Shrimp Firm and Mangrove Forest of Paikgacha, Rampal and Sonagazi Upazila	1987	1:50,000		
Landuse Map of Chaudanga Town	1986	1:50,000		
Landuse Map of Chaudanga Town	1986	1:1,200		
Landuse Map of Jhenaidha Town	1987	1:50,000		
Landuse Map of Jhenaidha Town	1987	1:1,200		
Land Development Unit, FCD-III, Naogaon Polder Area	1988	1:30,000		
Landuse Classification Map	1988	1:50,000		Kurigram, Gaibandha, Saghata, Fulchari, Ulipur, Chilmari, Rahumari, Char Rajibpur
Upazila Map of Bangladesh	1988	1:500,000		
Bamboo-clumbs Inventory map of Gaibandha Upazila	1988	1:50,000		
Map of Lakshimpur Union	1988	1:10,000		
Landuse Map of Dhaka City	1988	1:25,000		
Landuse Map of Dhaka City (Part)	1988-89	1:3,960		
Landuse Map of Chittagong City	1988	1:25,000		
Landuse Map of Chittagong City (Part)	1988	1:40,000		

Name of the Map	Year of Production	Scale	Total Sheet	Remark
Landuse Classification Map of Saturia Upazila	1984-85	1:50,000		
Landuse Classification	1984-85	1:50,000		Saturia
Landuse and Landtype	1984-85	1:12,500		Khalli Dhankora, Baliate, Fukurhati, Pabna Dighalia, Hargaz, Daragram, Baraid
Landuse and Landtype	1984-85	1:10,000		Taraf Atigram union
Pond Classification of Taras Upazila	1984	1:7,700		
Index Map Coastal Region of Bangladesh	1984	1:500,000		
Landuse Classification of Iswardi Upazila	1985	1:50,000		
Land Accretion and Plantation map of Coastal Afforestation Area	1983	1:30,000	26	
Landuse and Landtype Classification of Patuakhali and Barguna District	1985	1:50,000	45	
Landuse Classification Map of Sunamganj and Surrounding area	1958	1:50,000		
Map of Standing Water of Bangladesh	1985	1:250,000	4	
Map of River System of Bangladesh	1985	1:250,000	4	
Land Accretion and Plantation Map under Mangrove Afforestation Programme (Phase-I)	1985-86	1:10,000 and 1:30,000	147	Forest Classification
Landuse Classification Map of Tala Upazila	1986	1:50,000		
Landuse Classification Map of Muksudpur Upazila	1986	1:50,000		
Landuse Classification Map of Begumganj Upazila	1986	1:50,000		
Landuse Classification Map of Laksham Upazila	1986	1:50,000		
Shrimp farm, Salt-bed & Mangrove Forest of Moiskhali Upazila	1986	1:50,000		
Shrimp farm, Salt-bed & Mangrove Forest of Chakaria Upazila	1986	1:50,000		
Bangladesh Main River and their Distributories	1986	1:50,000		
Bangladesh Main River and their Distributories	1986	1:1,000,000		

Name of the Map	Year of Production	Scale	Total Sheet	Remark
Saline area and study zone of shrimp culture (Sluth West of Khulna)	1979	1:500,000	1	
Bangladesh Physiographic Division	1979	1:500,000	1	
Bangladesh Physiographic Division	1988	1:1,000,000	1	
Physiographic Region of Rajshahi Division	1979	1:500,000	1	
Salinity Affected Area of South West Bangladesh	1979	1:500,000	1	
Landuse Categorization map	1979	1:500,000	1	
Bangladesh (Stratification of Areas for village Forest Inventory)	1979	1:500,000	1	
Development Potential Rating Map	1979	1:250,000	2	Tangail District
Generalized Landuse map of Gaibandha	1979	1:30,000	1	
St. Martin's Island (Landuse Classification)	1980	1:3980	1	
St. Martin's Island (Landuse Classification)	1983	1:10,000	1	
St. Martin's Island (Landuse Classification)	1986	1:10,000	1	
Karnafuli Reservoir level in January and March	1980	1:250,000		
Flooding Conditions in the part of Ganges and Mohananda River	1980	1:250,000		
Location Map of Bhawal National Park	1982	1:10,000		Sripur and Joydevpur
Landuse Map of Hail Haor	1982	1:50,000	5	Landuse Classification
Land Accretion Map of Coastal Afforestation Division	1982	1:50,000	4	Chittagong, Noakhali, Barisal, Patuakhali Forest Division
Pond Concentration Map	1984	1:50,000	40	40 Upazilas
Large water bodies map of Bangladesh	1984	1:50,000	268	
Coastal Afforestation areas of Bangladesh	1984	1:500,000		
Kurigram Upazila map	1884	1:50,000		
Landuse Classification Map	1984-85	1:50,000		Madhukhali, Rajarhat, Dhabuara Upazila
Landtype Classification Map	1984-85	1:50,000		Madhukhali, Dhabuara Upazila

List of LANDSAT CCTs available at SPARRSO

No	Number	Path/Row	Date	Quantity	Density	Type
1	40614-03402	135/45	21-3-84	1(one)	1600 BPI	CCRS-pm
2	2746-03148	145/45	6-2-77	1(one)	1600 BPI	
3	2746-03190	145/46	6-2-77	1(one)	1600 BPI	
4	40588-03140	135/46	5-3-84	1(one)	1600 BPI	CCRS-pm
5	40589-03460	135/43	25-2-84	1(one)	1600 BPI	CCRS-pm
6	40589-03463	136/44	25-2-84	1(one)	1600 BPI	CCRS-pm
7	40589-03465	136/45	25-2-84	1(one)	1600 BPI	CCRS-pm
8	2711-03251	146/44	2-1-77	1(one)	1600 BPI	CCRS-pm
9	2711-03245	146/43	2-1-77	1(one)	1600 BPI	
10		146/45	23-9-78	1(one)	1600 BPI	
11	40685-03435	136/43	31-5-84	1(one)	1600 BPI	CCRS-pm
12	40836-03493	137/44	27-9-84	1(one)	1600 BPI	CCRS-pm
13	40804-03492	137/43	27-9-84	1(one)	1600 BPI	CCRS-pm
14	2748-03300	147/45	8-2-77	1(one)	1600 BPI	
15	40612-03522	137/44	19-3-84	1(one)	1600 BPI	CCRS-pm
16	40804-03500	137/45	27-9-84	1(one)	1600 BPI	
17	40612-03315	137/43	19-3-84	1(one)	1600 BPI	CCRS-pm
18	40603-03582	138/43	10-3-84	1(one)	1600 BPI	CCRS-pm
19	40587-03583	138/43	25-2-84	1(one)	1600 BPI	CCRS-pm
20	40603-03590	138/45	10-3-84	1(one)	1600 BPI	CCRS-pm
21	40603-03575	138/42	10-3-84	1(one)	1600 BPI	CCRS-pm
22	2749-03343	148/42	9-2-77	1(one)	1600 BPI	
23	83071803450 Scene ID	148/43	21-2-80	1(one)	1600 BPI	
24	2749-03354	148/45	9-2-77	1(one)	1600 BPI	
25	40587-03380	138/42	23-2-84	1(one)	1600 BPI	CCRS-pm
26	40587-03385	138/44	23-2-84	1(one)	1600 BPI	CCRS-pm
27	40603-03385	138/44	10-3-84	1(one)	1600 BPI	CCRS-pm
28	50562-04042	139/42	29-1-84	1(one)	1600 BPI	CCRS-pm
29	2750-03401	149/42	10-2-77	1(one)	1600 BPI	

No	Number	Path/Row	Date	Quantity	Density	Type
30	40610-04035	139/42	17-3-84	1(one)	1600 BPI	CCRS-pm
31	40562-04044	139/43	29-1-84	1(one)	1600 BPI	
32	40610-04042	139/43	17-3-84	1(one)	1600 BPI	
33		137/45	19-3-84	1(one)	1600 BPI	CCRS-pm
34		149/43	22-2-73	1(one)	1600 BPI	CCRS-pm

also
List of LANDSAT CCTs available at SPARRSO

No	Number	Path/Row	Date	Tape	CCT-ID	Quantity	Density	Type
1	51553-040016	138/41	16-11-88	1/3	T01084	1(one)	6250 BPI	CCRS/BSQ
2	51553-040016	138/41	16-11-88	2/3	T01085	1(one)	6250 BPI	CCRS/BSQ
3	51553-040016	138/41	16-11-88	3/3	T01086	1(one)	6250 BPI	CCRS/BSQ
4	51690-035416	137/41	17-11-88	1/3	T01099	1(one)	6250 BPI	CCRS/BSQ
5	51690-035416	137/41	17-11-88	2/3	T01100	1(one)	6250 BPI	CCRS/BSQ
6	51690-035416	137/41	17-11-88	3/3	T01101	1(one)	6250 BPI	CCRS/BSQ
7	51553-040106	138/43	17-11-88	1/3	T01087	1(one)	6250 BPI	CCRS/BSQ
8	51553-040106	138/43	17-11-88	2/3	T01088	1(one)	6250 BPI	CCRS/BSQ
9	51683-034951	136/43	17-11-88	1/3	T01072	1(one)	6250 BPI	CCRS/BSQ
10	51683-034951	136/43	17-11-88	2/3	T01073	1(one)	6250 BPI	CCRS/BSQ
11	51683-034951	136/43	17-11-88	3/3	T01074	1(one)	6250 BPI	CCRS/BSQ
12	51683-034915	136/44	15-11-88	1/3	T01075	1(one)	6250 BPI	CCRS/BSQ
13	51683-034915	136/44	15-11-88	2/3	T01076	1(one)	6250 BPI	CCRS/BSQ
14	51553-040106	146/44	15-11-88	3/3	T01077	1(one)	6250 BPI	CCRS/BSQ
15	51450-035429	138/43	16-11-88	3/3	T01089	1(one)	6250 BPI	CCRS/BSQ
16	51450-035429	137/44	16-11-88	1/8	T00969	1(one)	1600 BPI	CCRS/BSQ
17	51450-035429	137/44	16-11-88	2/8	T00970	1(one)	1600 BPI	CCRS/BSQ
18	51450-035429	137/44	17-11-88	3/8	T00971	1(one)	1600 BPI	CCRS/BSQ
19	51450-035429	137/44	19-11-88	4/8	T00972	1(one)	1600 BPI	CCRS/BSQ
20	51450-035429	137/44	19-11-88	5/8	T00973	1(one)	1600 BPI	CCRS/BSQ
21	51450-035429	137/44	19-11-88	6/8	T00974	1(one)	1600 BPI	CCRS/BSQ
22	51450-035429	137/44	19-11-88	7/8	T00975	1(one)	1600 BPI	CCRS/BSQ
23	51450-035429	137/44	19-11-88	8/8	T00976	1(one)	1600 BPI	CCRS/BSQ
24	51706-035536	137/44	9-12-88	1/3	T01145	1(one)	6250 BPI	CCRS/BSQ
25	51706-035536	137/44	9-12-88	2/3	T01146	1(one)	6250 BPI	CCRS/BSQ
26	51706-035536	137/45	9-12-88	3/3	T01147	1(one)	6250 BPI	CCRS/BSQ

No	Number	Path/Row	Date	Tape	CCT-ID	Quantity	Density	Type
27	51688-040656	139/42	7-12-88	1/3	T01093	1(one)	6250 BPI	CCRS/BSQ
28	51688-040656	139/42	17-11-88	2/3	T01094	1(one)	6250 BPI	CCRS/BSQ
29	51688-040656	139/42	17-11-88	3/3	T01095	1(one)	6250 BPI	CCRS/BSQ
30	51683-034939	136/45	6-12-88	1/3	T01142	1(one)	6250 BPI	CCRS/BSQ
31	51683-034939	136/45	6-12-88	2/3	T01143	1(one)	6250 BPI	CCRS/BSQ
32	51683-034939	136/45	6-12-88	3/3	T01144	1(one)	6250 BPI	CCRS/BSQ
33	51683-040720	139/43	17-11-88	1/3	T01096	1(one)	6250 BPI	CCRS/BSQ
34	51683-040720	139/43	17-11-88	2/3	T01097	1(one)	6250 BPI	CCRS/BSQ
35	51683-040720	139/43	17-11-88	3/3	T01096	1(one)	6250 BPI	CCRS/BSQ
36	51688-040632	139/41	17-11-88	1/3	T01098	1(one)	6250 BPI	CCRS/BSQ
37	51688-040632	137/41	17-11-88	2/3	T01096	1(one)	6250 BPI	CCRS/BSQ
38	51688-040632	139/41	17-11-88	3/3	T01090	1(one)	6250 BPI	CCRS/BSQ
39	51690-035523	137/44	16-11-88	1/3	T01091	1(one)	6250 BPI	CCRS/BSQ
40	51690-035523	137/44	16-11-88	2/3	T01092	1(one)	6250 BPI	CCRS/BSQ
41	51690-035523	138/44	16-11-88	3/3	T01081	1(one)	6250 BPI	CCRS/BSQ
42	51450-035406	137/43	19-2-88	3/3	T00687	1(one)	6250 BPI	CCRS/BSQ
43	51450-035406	137/43	19-2-88	1/3	T00685	1(one)	6250 BPI	CCRS/BSQ
44	51450-035406	137/43	19-2-88	2/3	T00686	1(one)	6250 BPI	CCRS/BSQ

D8C

AGROECOLOGICAL MAPS OF BANGLADESH (1:750,000)

Agroecological Regions and Subregions Bangladesh

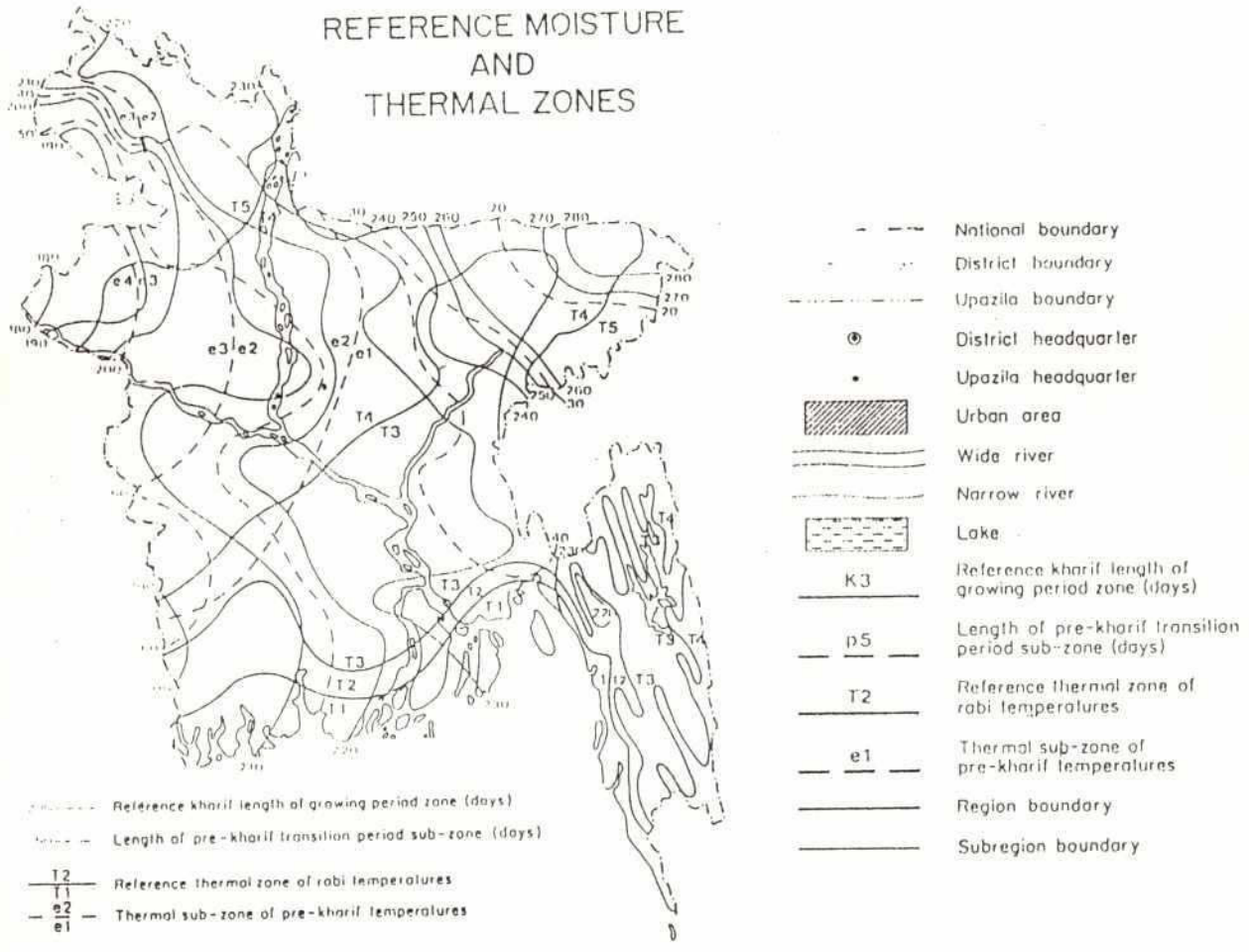
GOB/UNDP/FAO

This map has been developed from AEZ database and of Land Resources Appraisal of Bangladesh by FAO/UNDP Agriculture Development Adviser Project in 1981. The map illustrated 30 Agroecological regions of Bangladesh along with many subregions at a scale of 1:750,000. The information also derived from Reconnaissance Soil Survey reports done by Soil Research Development Institute (SRDI).

Map name: Agroecological Maps of Bangladesh
Type of map: Thematic
Published date: 1985
Edition: lst
Survey Methods/date: Based on Reconnaissance soil survey information & Agro-ecological Zones (AEZ) database.
Coverage: Whole Country
Printed by: FAO/UNDP
Source: SRDI
Output size: 40 * 30 inches
Color: Multi colour
Scale: 1:750,000
Procurement: Formal request
Cost: Not required

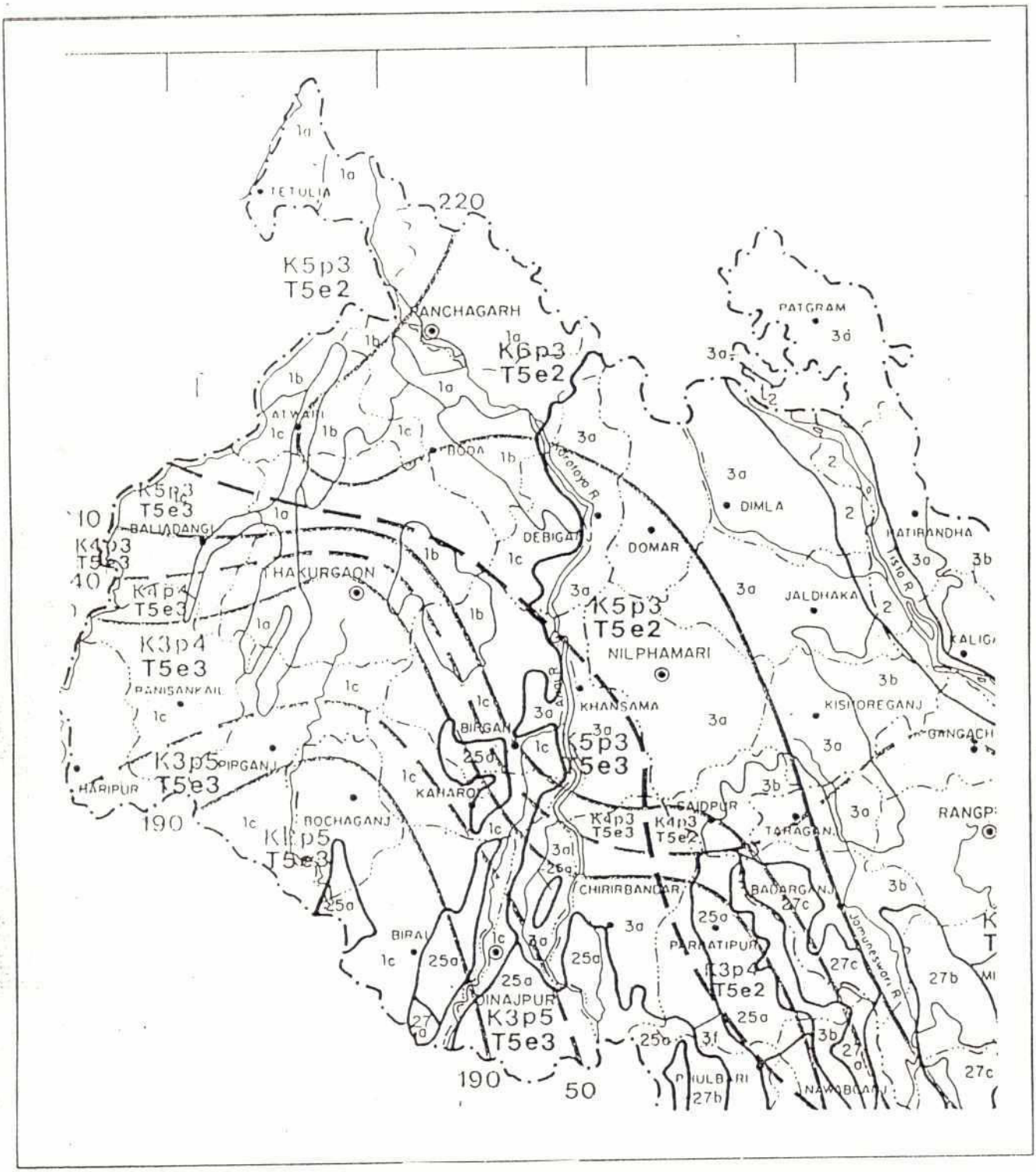
AGROECOLOGICAL REGIONS AND SUBREGIONS BANGLADESH

SCALE 1 : 750 000



SAMPLE MAP

AGROECOLOGICAL REGIONS OF BANGLADESH - 1:750,000



SAMPLE MAP

Chapter I

SOIL RESOURCES DEVELOPMENT INSTITUTES (SRDI)

SRDI is the main organization under the Ministry of Agriculture for soil inventory and analysis in Bangladesh. This institute prepares soil survey, landuse and land capability maps and maps for other land-related activities after interpretation of aerial photographs followed by field checks.

List of maps prepared by Soil Resource Development Institute

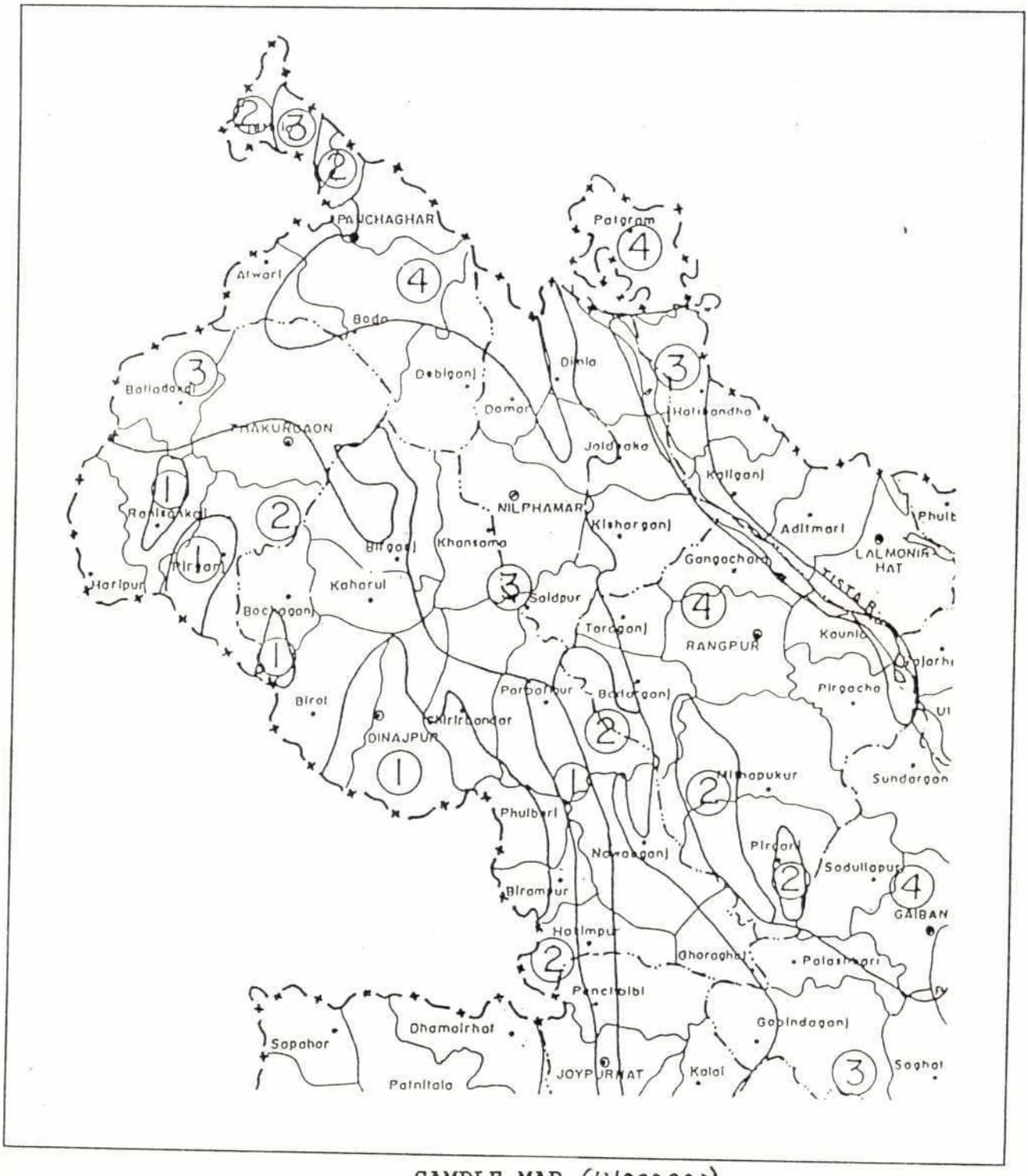
Name of the Map	Coverage	Sheet No.	Scale
Reconnaissance Soil Map	Whole country		1:125,000
Land Use Map	Whole country		1:125,000
Land Capability Map	Whole country		1:125,000
Semi Detail Soil Survey	All Thanas		1:50,000
Detail Soil Survey	Specific areas		1:5,000
Thana Land Use utilization Guide	122 Thanas has been published	122	1:50,000
Physiography of Bangladesh	Whole country	1 sheet	1:1,000,000 to 1:5,000,000
Drainage Map of Bangladesh	Whole country	1 sheet	-do-
Land Use Map of Bangladesh	Whole country	1 sheet	-do-
Flood Prone Areas of Bangladesh	Whole country	1 sheet	-do-
Drought Prone Areas of Bangladesh	Whole country	1 sheet	-do-
Saline areas of Bangladesh	Whole country	1 sheet	-do-

DROUGHT PRONE AREAS IN BANGLADESH (Kharif Season) (1:1,000,000)

Bangladesh Agriculture Research Council (BARC) BARC has identified and mapped drought prone areas of Bangladesh for Kharif season. Percent of dry-humid and dry decades present in each kharif humid periods were taken into consideration for delineating the drought prone areas. The reliability of moisture supply was quantified through a decadal frequency analysis of precipitation in relation to potential evapotranspiration (PET) using historical rainfall records.	Map name: Classification of Kharif (T.Aman) Drought Prone Areas in Bangladesh
	Type of Map: Thematic
	Published Date: 1990
	Edition: 1st
	Survey methods/date: Agro-ecological zones (AEZ) data base and land resources inventory maps at 1:250,000 and secondary information on soil moisture were used to identify the drought prone areas.
	Coverage: Whole Country
	Printed by: BARC
	Source: BARC
	Output size: 57 * 87.5 cm or 22.5 * 34.5 inches
	Colour : Multi colour
	Scale: 1:1,000,000
	Procurement: Formal request

Appendix Y

DROUGHT PRONE AREAS IN BANGLADESH KHARIF SEASON



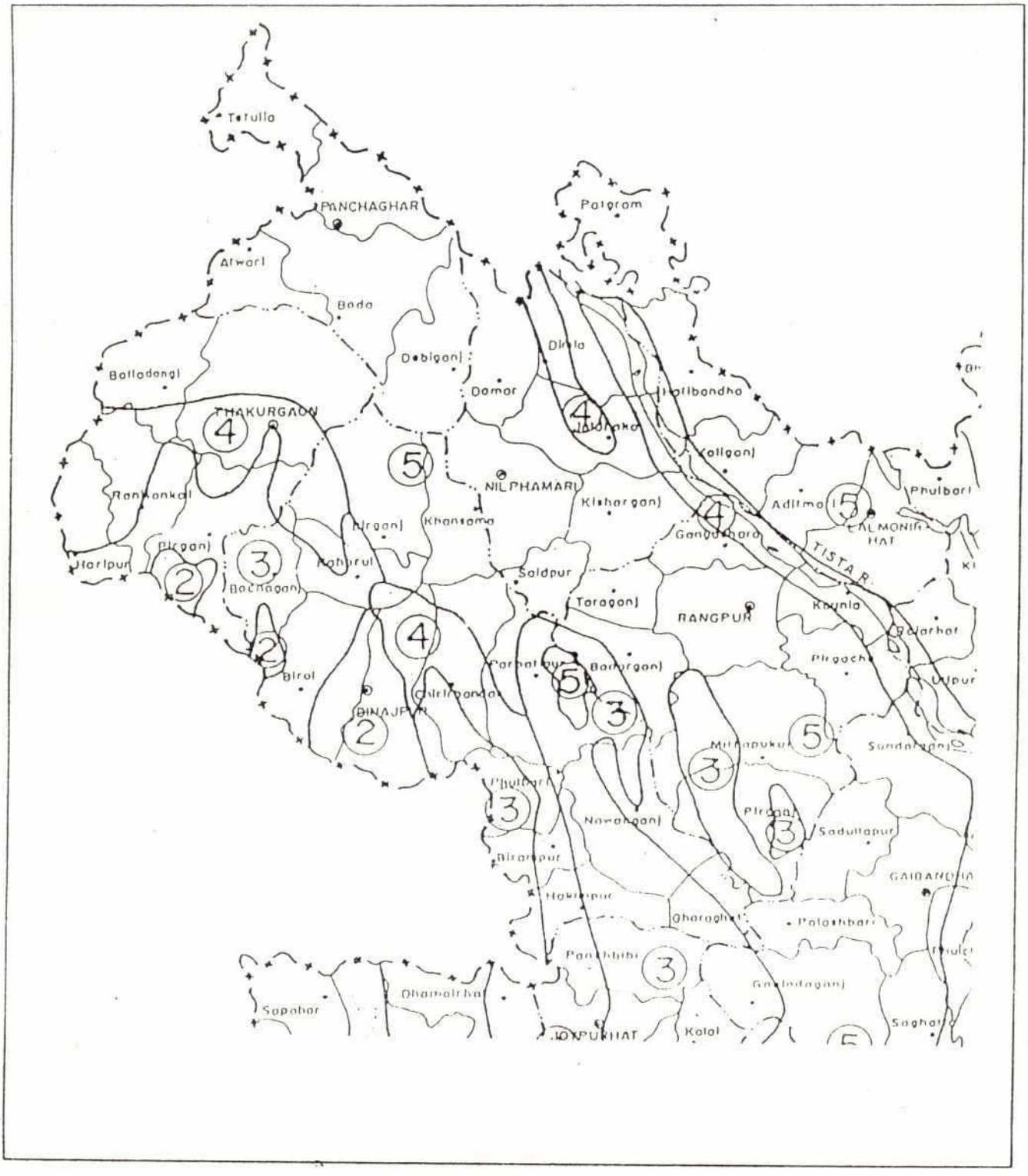
SAMPLE MAP (1:1,000,000)

RABI AND PRE-KHARIF DROUGHT CLASSIFICATION MAP (1:1,000,000)

Bangladesh Agriculture Research Council (BARC) BARC has identified and mapped drought prone areas of Bangladesh for Rabi and Pre-kharif season. Three parameters were considered in delinating drought prone areas. They are cumulative effect of dry days, higher temperature during pre-kharif and low soil moisture storage. Available moisture holding capacity of each soil series were added to it for full consideration of drought situation of the areas.	Map name: Classification of Rabi and Pre-kharif Drought Prone Areas in Bangladesh
	Type of Map: Thematic
	Published Date: 1990
	Edition: lst
	Survey methods/date: Agro-ecological zones (AEZ) data base and land resources inventory maps at 1:250,000 scale has been used to identify and map drought prone areas of Bangladesh for Rabi and Pre-kharif season.
	Coverage: Whole Country
	Printed by: BARC
	Source: BARC
	Output size: 57 * 87.5 cm or 22.5 * 34.5 inches
	Colour : Multi colour
	Scale: 1:1,000,000
	Procurement: Required formal request

c:HAK-7:tc

RABI AND PRE-KHARIF DROUGHT CLASSIFICATION MAP - 1:10,000,00

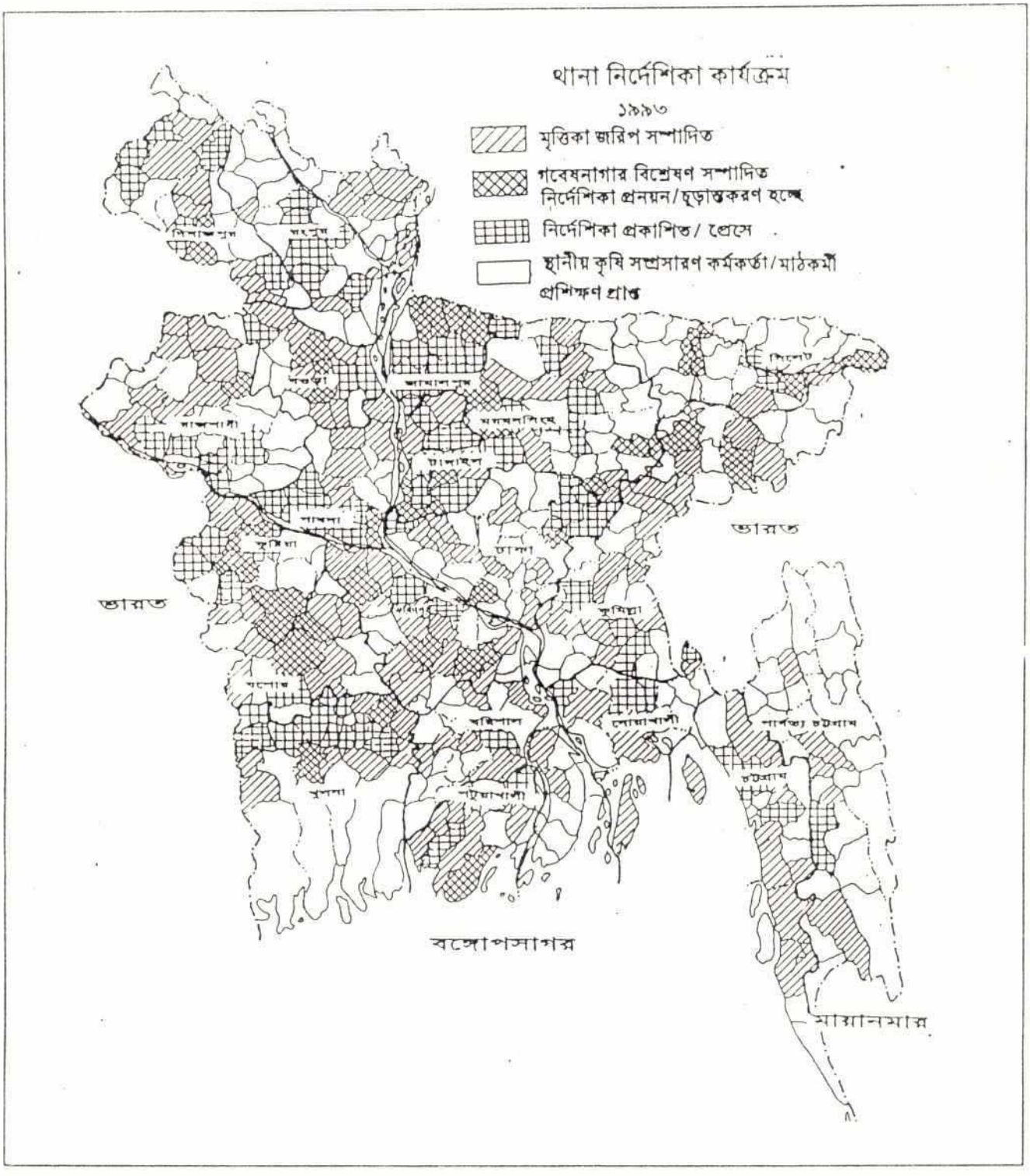


SAMPLE MAP

c:HAK-7:tc

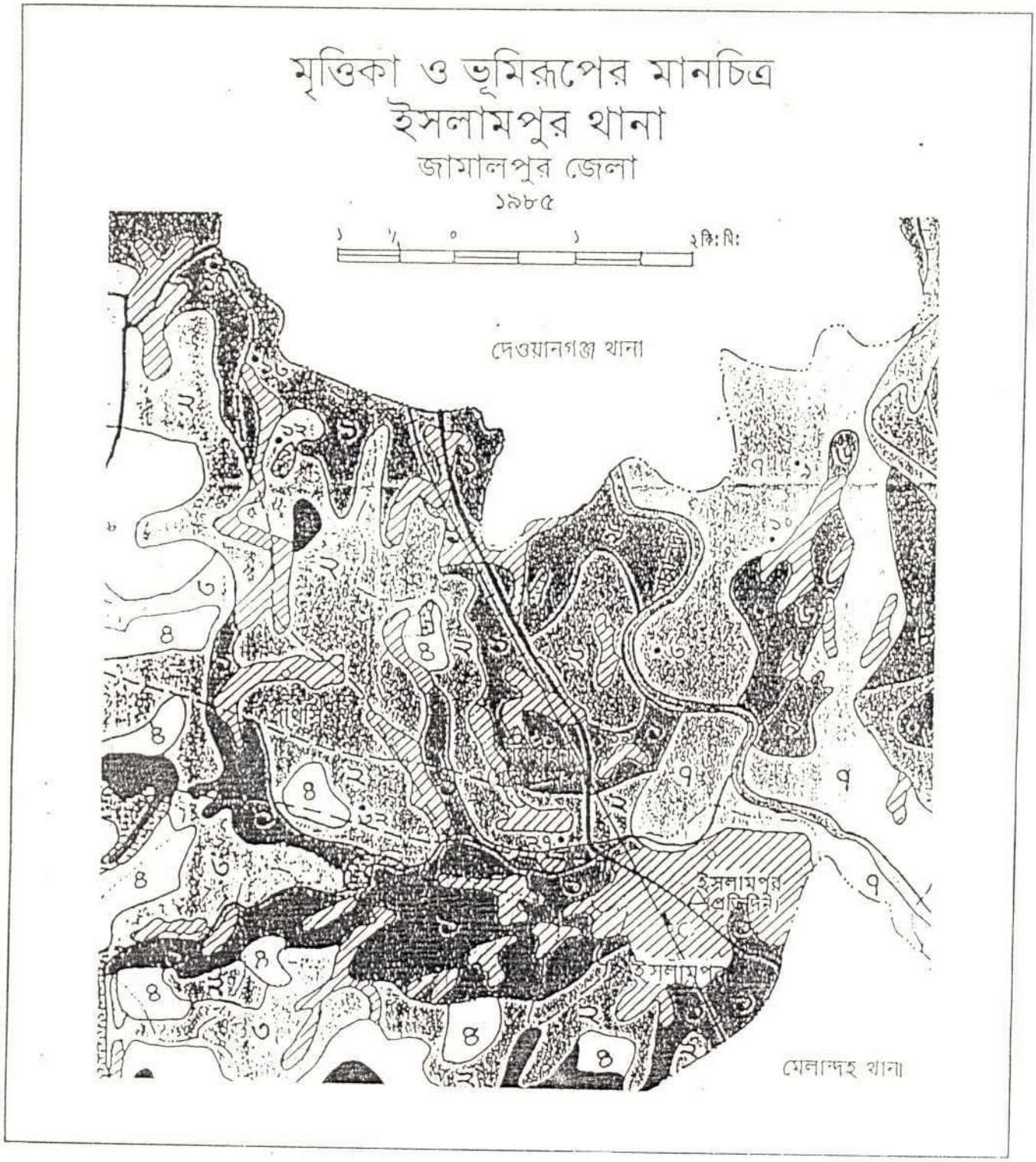
SOIL TEXTURE MAP (1:50,000)

Thana Soil Texture Map Soil Resource Development Institute Thana Guidebook has been developed by SRDI for all the Thanas of Bangladesh to better landuse planning and Agricultural Development in Rural Bangladesh. Each of the guide books incloudes a 1:50,000 scale map, which contain information on land level and soil textures. The map has been developed on the basis of Semi detailed soil survey.	Map name: Soil Texture Map Type of map: Thematic Published date: 1985 Edition: lst Survey methods/date: A semi detail soil survey has been undertaken for each of the Thana. Coverage: Thana wise whole country. Printed by: Soil Resource Development Institute (SRDI) Color: Multi colour Scale: 1:50,000 Procurement: Available for general user and related research organization and projects,required a formal request. Cost: Complementary



Soil Texture Map (1:50,000): Index
Soil Texture Map(1:50,000):Index

SOIL TEXTURE MAP 1:50,000

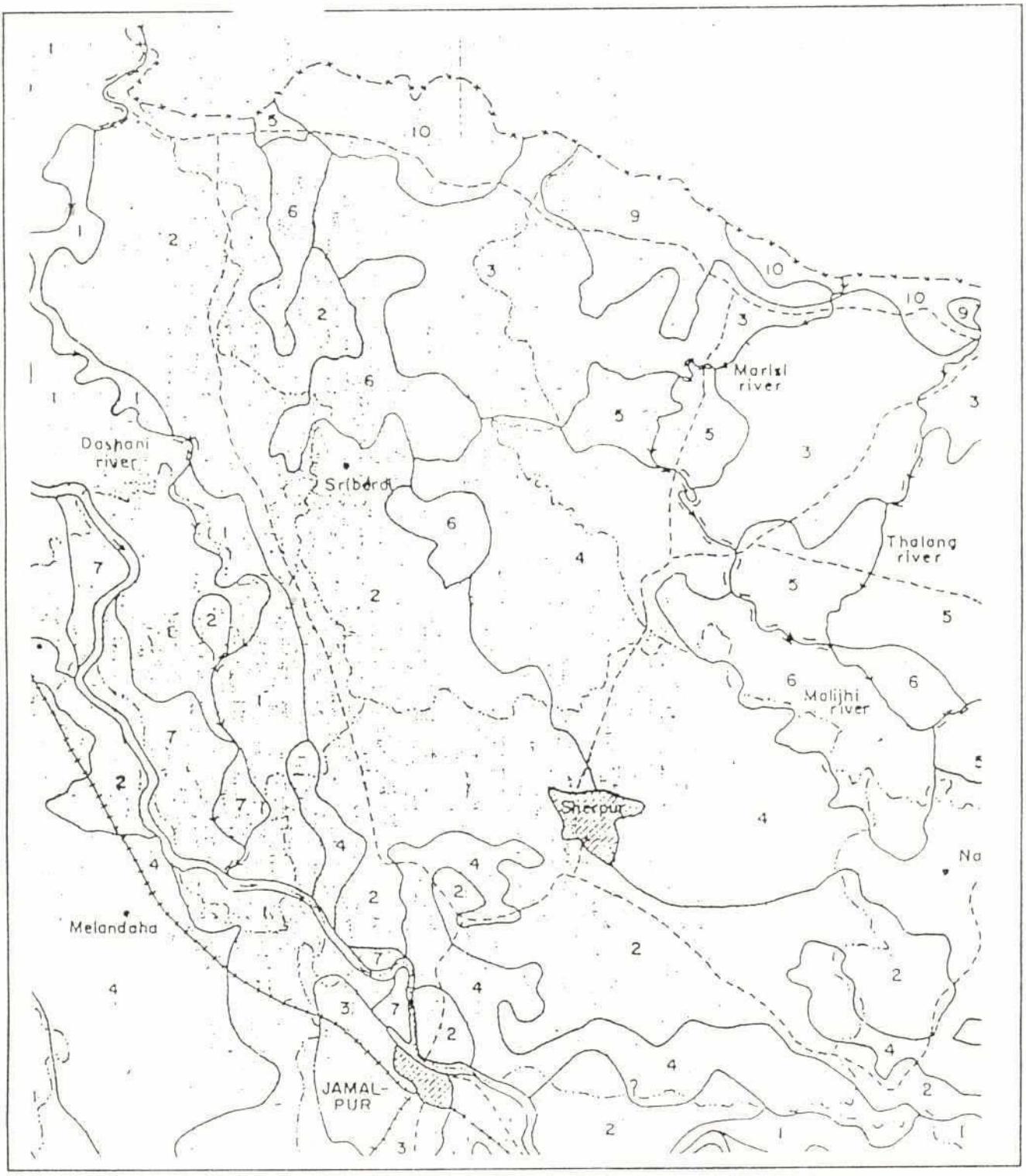


SAMPLE MAP

LAND USE ASSOCIATIONS (1:125,000)

Land Use Association Map Soil Resource Development Institute This is one of three map enclosed with the reconnaissance Soil Survey (RSS) reports. RSS was carried out between 1964 and 1975 andit was published in 27 volumes, mainly on a district basis by the Soil Resources Development Institute (SRDI). Most of the material in the RSS volumes is, of course, on soils but there is also much information on present land useand land capability. In classifying agricultural land capability it puts them into broad categories of good, moderate, poor and very poor.	Map name: Land Use Associations Map Type of map: Thematic Published date: 1966 revised in 1972 Edition: 2nd Survey methods/date: Reconnaissance Soil Survey (RSS) had been conducted during the period of 1964 and 1975. Coverage: District wise whole country. Printed by: Soil Resource Development Institute (SRDI) Color: Ammonia Print Colour Scale: 1:125000 Procurement: Reconnaissance Soil Survey (RSS) foreach greater Districts can be purchased from SRDI office. Cost: 250 taka for each volume.

LAND USE ASSOCIATION -1:250 00

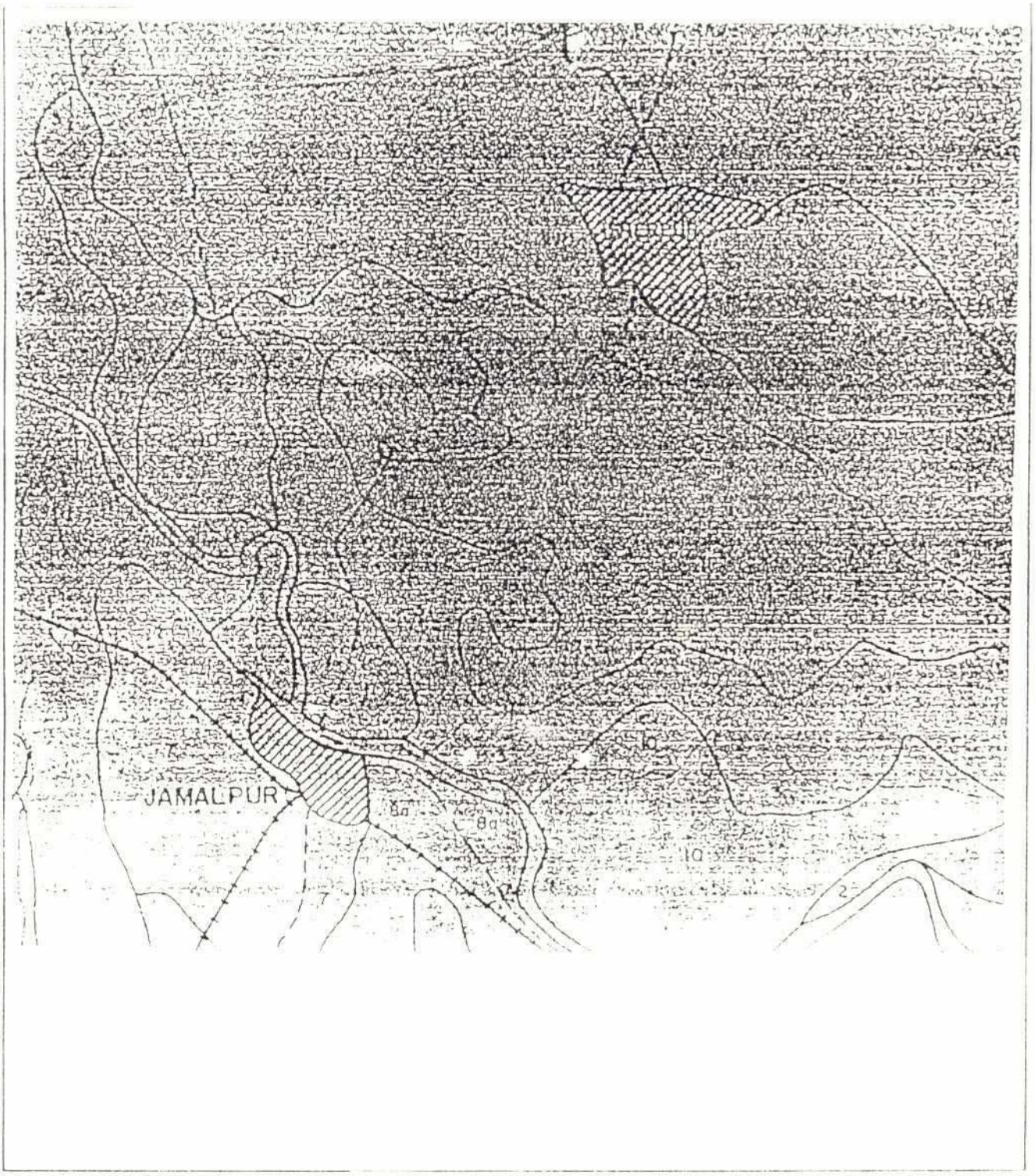


SAMPLE MAP

SOIL ASSOCIATION MAP (1:125,000)

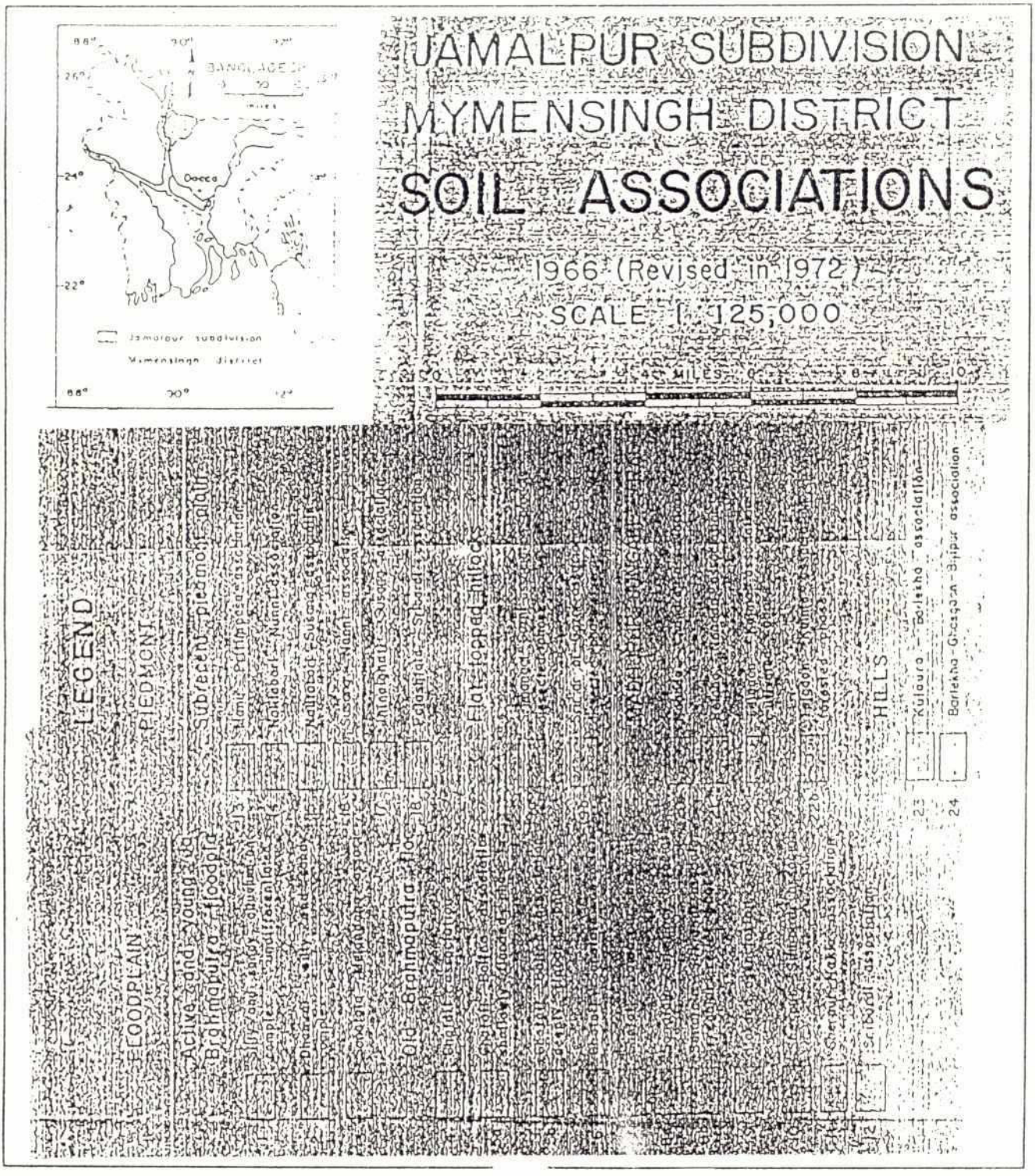
Soil Association Map Soil Resource Development Institute This is one of three map enclosed with the reconnaissance Soil Survey (RSS) reports. RSS was carried out between 1964 and 1975 andit was published in 27 volumes, mainly on a district basis by the Soil Resources Development Institute (SRDI). Most of the material in the RSS volumes is, of course, on soils but there is also much information on present land use and land capability. In classifying agricultural land capability it put them into broad categories of good, moderate, poor and very poor.	Map name: Soil Association Map
	Type of map: Thematic
	Published date: 1966 revised in 1972
	Edition: 2nd
	Survey methods/date: Reconnaissance Soil Survey (RSS) had been conducted during the period of 1964 and 1975.
	Coverage: District wise whole country.
	Printed by: Soil Resource Development Institute (SRDI)
	Color: Ammonia Print Colour
	Scale: 1:125,000
	Procurement: Reconnaissance Soil Survey (RSS) foreach greater Districts can be purchased from SRDI office.
	Cost: 250 taka for each volume.

SOIL ASSOCIATION MAP - 1:250 00



SAMPLE MAP

SOIL ASSOCIATION MAP - 1:250 00



LEGEND AND OTHER INFORMATION

Chapter J

GEOLOGICAL SURVEY OF BANGLADESH (GSB)

Geological Survey of Bangladesh (GSB) is the main organization for conducting Geological survey and reserch in Bangladesh. GSB published a map of Bangladesh on 1:1000,000 scale and produced some other geological maps containing geological information of particular location. Following is a list of geological maps produced by GSB.

Name of the Area	Scale	Year
Geological map of Madhupur Tract and its adjoining areas	1:250,000	1988
Geological map of the Rowangchari-Ruma area	1:250,000	1985
Geological map of Brahmanbaria, Comilla and Noakhali area	1:250,000	1977
Geological map of Northern part of Chittagong District	1:250,000	1978
Geological map of Southern part of Sylhet District	1:250,000	1970
Geological map of Eastern & Northern part of Sylhet District	1:250,000	1978
Geological map of Chandraghona-Kaptai area	1:250,000	1985
Geological map of Joypurhat area	1:250,000	1985
Geological map of Madhayapara area	1:250,000	1987
Geological map of Bangladesh	1:1,000,000	
Gravity map of Bangladesh	1:1,000,000	
Magnetic map of Bangladesh	1:1,000,000	
Geological Mapping	1:50,000	
Mineral deposits	1:50,000	
Urban engineering	1:50,000	

GEOLOGICAL MAP OF BANGLADESH

Geological Map of Bangladesh Geological Survey of Bangladesh (GSB) This map prepared and published by the Geological Survey of Bangladesh at a scale of 1:1,000,000 supports geologic framework investigations, mineral and energy resources evaluation, and natural hazard mitigation. The self explantory sheet also displayed four maps showing the generalized physiographic map of Bangladesh; a generalized tectonic map of Bangladesh and adjoining areas; elevation map showing correlation sections and an index map showing published and unpublished various geological map of Bangladesh. All these maps are at a scale of 1:4,000,000.	Map name: Geological Map of Bangladesh Type of map: Thematic Published date; 1990 Edition: 1st edition Survey methods/date; The map has been developed from secondary information. The previous geological works of GSB was compiled into one map. Base of the map compiled from LANDSAT digital mosaic of 1984 and other topographic maps. Coverage: Whole Bangladesh Printed by: US Geological Survey Source: Geological Survey of Bangladesh Output size: 102cm X 76cm Colour: Multi colour Projection: Lambart Conformal Scale: 1:1,000,000 Procurement: Purchasable Cost:Tk.2 hundred for each copy

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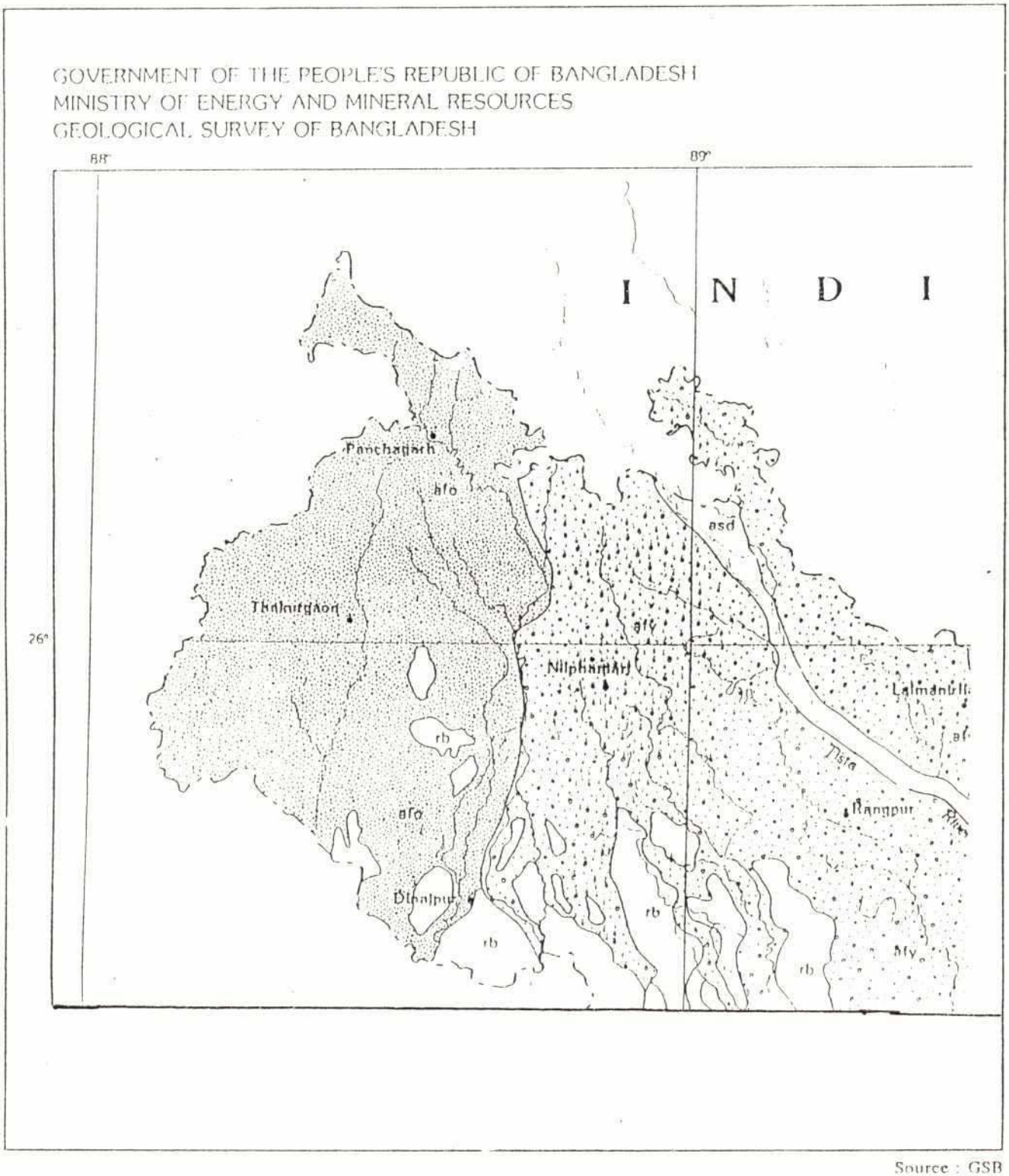
GEOLOGICAL MAP OF BANGLADESH

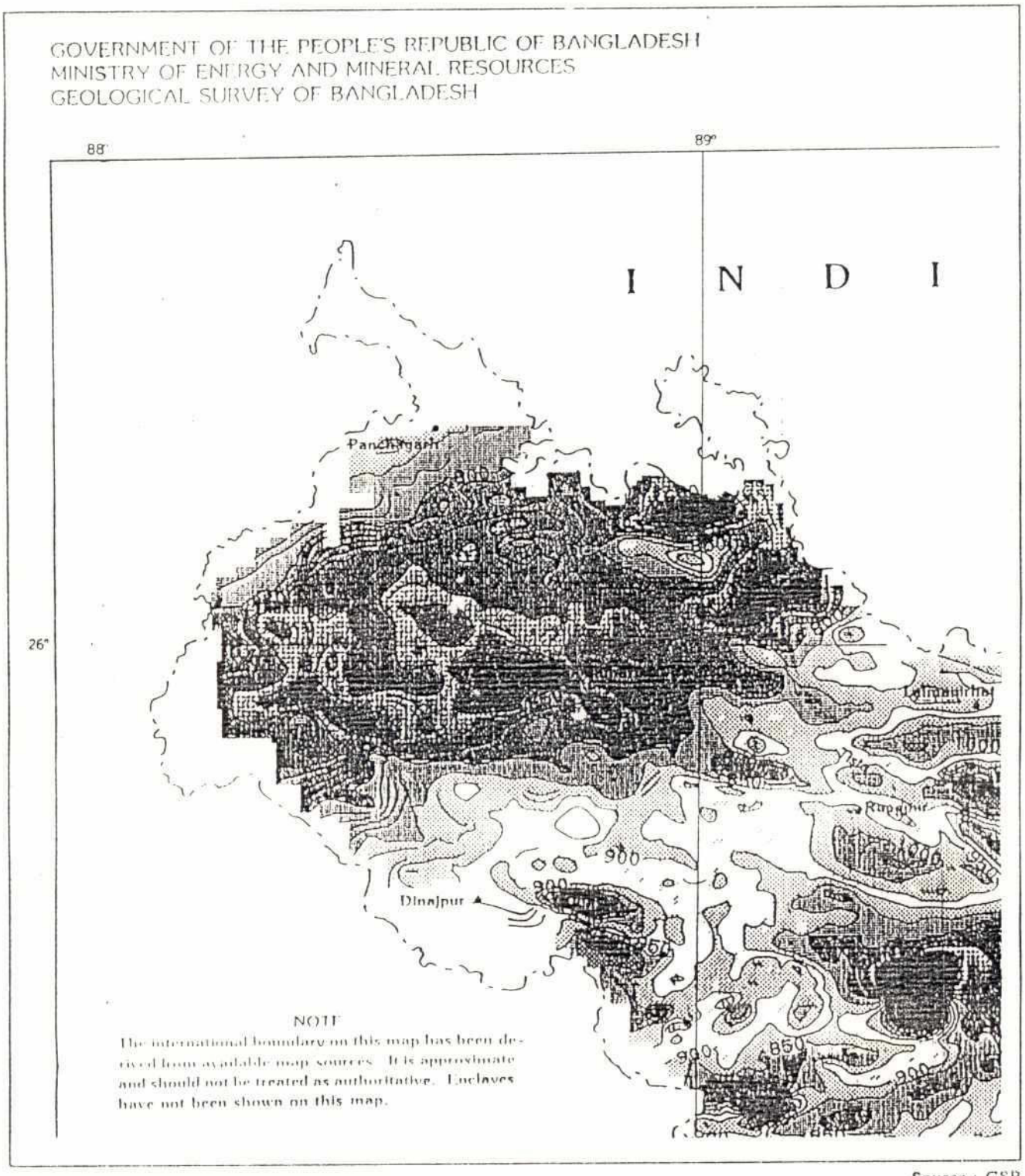


Geological Map of Bangladesh:Sample Map

AEROMAGNETIC ANOMALY MAP OF BANGLADESH

Aeromagnetic Anomaly Map of Bangladesh Geological Survey of Bangladesh This map is one in the map series of Bangladesh prepared and published by the Geological Survey of Bangladesh at a scale of 1:1,000,000, in support of geologic framework investigations, mineral and energy resources evaluation, and natural hazard mitigation. This self explanatory sheet also displayed two maps at a scale of 1:4,000,000, showing an aeromagnetic map overprinted with supplementary information and a generalized tectonic map of Bangladesh and adjoining areas.	Map name: Aeromagnetic Anomaly Map of Bangladesh
	Type of map: Thematic
	Published date: 1990
	Edition: 1st edition
	Survey methods/date: The aeromagnetic maps were produced by digitizing a residual total intensity aeromagnetic map compiled by Hunting Geology and Geophysics Ltd.in 1981 at a scale of 1:500,000. Digital data were processed and grided on 1-km grid.
	Coverage: Whole Bangladesh
	Printed by: U.S. Geological Survey
	Source:Geological Survey of Bangladesh
	Output size: 90cm * 76m
	Color: Multi colour
	Projection: Lambert Conformal Conic
	Scale: 1:1,000,000
	Procurement: Purchasable
	Cost: Two hundred for each copy

AEROMAGNETIC ANOMALY MAP OF BANGLADESH



SAMPLE MAP

Source : GSB

BOUGUER GRAVITY ANOMALY MAP OF BANGLADESH

Bouguer Gravity Anomaly Map of Bangladesh Geological Survey of Bangladesh (GSB) This map is one in the map series of Bangladesh prepared and published by the Geological Survey of Bangladesh at a scale of 1:1,000,000, in support of geologic framework investigations, mineral and energy resources evaluation, and natural hazard mitigation. The self explanatory sheet also displayed two maps showing the gravity fields of Bangladesh in relation to that of its immediate surroundings and a generalized tectonic map of Bangladesh and adjoining areas at a scale of 1:4,000,000.	Map Name: Bouguer Gravity Anomaly Map of Bangladesh
	Type of Map: Thematic
	Published Date: 1990
	Edition: lst edition
	Survey Methods/Date: The map has been produced by digitizing a hand-drawn regional anomaly map prepared by Petrobangla. Data from various exploration agencies incorporating about 15,000 stations in Bangladesh and surrounding areas were used.
	Coverage: Whole Bangladesh
	Printed by: U.S. Geological Survey
	Source: Geological Survey of Bangladesh
	Output size: 90cm * 76cm
	Colour : Multi colour
	Projection: Lambart Conformal Conic
	Scale: 1:1,000,000
	Procurement: Purchasable
	Cost: Two hundred for each copy

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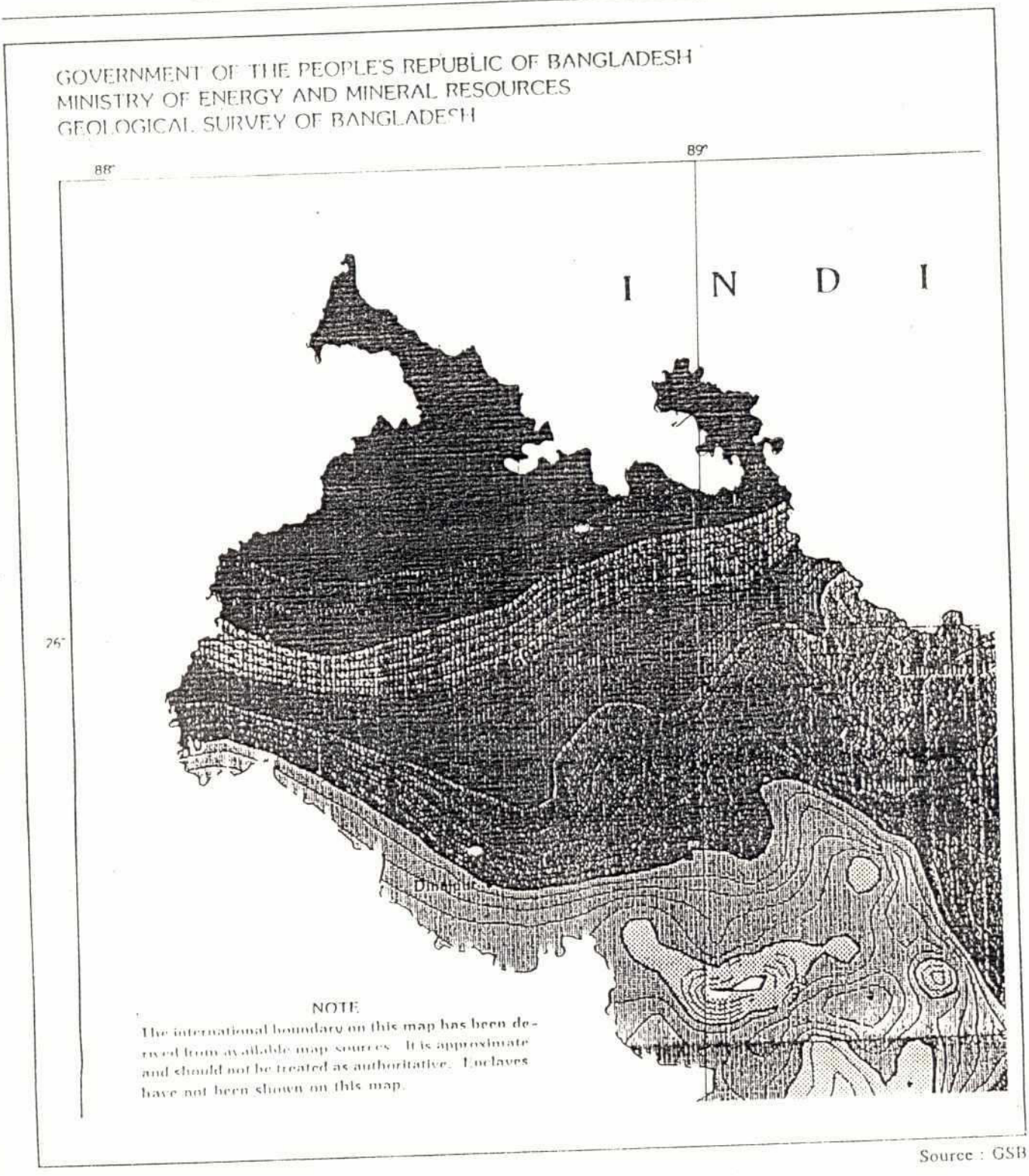
BOUGER GRAVITY ANOMALY MAP OF BANGLADESH



Bouguer Gravity Anomaly Map of Bangladesh:Sample Map

GEOLOGICAL MAP OF NORTH-EASTERN PART OF BANGLADESH

Geological Map of North-Eastern of Bangladesh Geological Survey of Bangladesh (GSB) One of the regular activities of of GSB is to do geological survey in various part of the country. The activities include production of geological maps. This is one of that map series. Most of the local level geological maps published by the Geological Survey of Bangladesh are at a scale of 1:250,000. Till 1988 there had been many geological surveys completed by GSB officials. The survey reports always contain geological map for the survey area.	**Map Name: Geological Map of North-Eastern Part of Sylhet District**
	Type of Map: Thematic
	Published Date: 1964-66
	Survey Methods/Date: Geological mapping of the Eastern and the North-eastern part of Sadar Subdivision of Sylhet District were carried out over a period of eight months during 1964-66. On the basis of lithology, the sedimentary sequence is divided into six formations.
	Coverage: North & North-eastern of Sylhet District.
	Printed by: Geological Survey of Bangladesh
	Source: Geolopgical Survey of Bangladesh
	Output Size: 50cm * 45cm
	Color: Black & White
	Projection: Lambart Conformal Conic
	Scale: 1:125,000
	Procurement: Formal request required to Director General

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