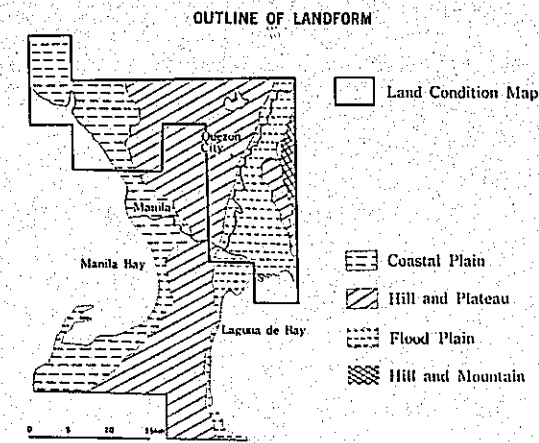
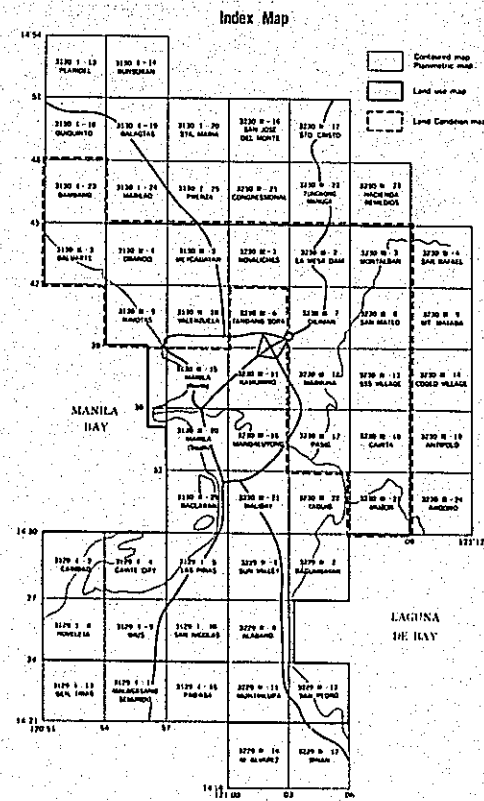


METRO MANILA LAND CONDITION MAP
SCALE 1 : 10,000



INFORMATION AND USAGE OF
THE LAND CONDITION MAP

REPUBLIC OF THE PHILIPPINES

2. Utilization of Land Condition Map

This land condition map is prepared using the 1:10,000 contoured map as the base on which the landform classification, ground elevation, organizations and facilities are printed in 12 colors.

It is possible to find out the following areas by reading the land condition map:

- 2-1 Areas affected by flood or high tide such as low or marshy land.
- 2-2 Areas where earthquake damage is expected due to unfavourable conditions of the surface layer.
- 2-3 Areas where ground subsidence is likely to take place such as coastal plain, delta and flood plain areas.
- 2-4 Artificially deformed land and unstable slopes in mountainous or hilly areas where disasters are expected.
- 2-5 Plateaus and gentle hilly areas being comparatively safe from flood or landslide damage, etc.

Therefore, the land condition map can provide basic information not only for disaster prevention but also for land development, and can be utilized more effectively together with the land use map.

3. Outline of Landform

The classes of landforms in the survey area are generally located as follows:

- 3-1 Coastal Plain
Coastal plain with elevation of less than 3m extending north to south along Manila Bay.
- 3-2 Hill and Plateau
The hills and plateaus, where Quezon City, Mandaluyong and Makati are located, extending north to south on the eastern side of the coastal plain. Elevations of the hills and plateaus around Pasig River are 20m-30m and gradually increase northward to 80m-100m.
- 3-3 Flood Plain
Around the Marikina River and Laguna de Bay, the flat lowland with an elevation of 1m-10m covers wide area of floodplain.
- 3-4 Hill and Mountain
The mountain area has an elevation of 200m-300m. The western side of the mountain area which is hilly, has an elevation of 50m-100m. In the mountains where top flats still remain, gentle slopes are generally prevailing although there are steep slopes along the river valleys.

4. Components of the Land Condition Map

The land condition map is composed of the following three major categories:

- Landform Classification,
- Ground Elevation,
- Organization and Facilities

These categories are then divided into 91 sub-classifications.

4-1 Landform Classification

As for the landform classification, various types of landform are classified into mountain, hill and plateau, lowland (flood plain, delta and others), etc. according to the form, formative processes and surface materials. In the detailed classification, the safety or susceptibility to disasters is also taken into account.

4-2 Ground Elevation

In the lowland area the ground elevation points and microrelief lines are shown in order to clarify its susceptibility to flooding and high tides.

4-3 Organization and Facilities

Regarding organization and facilities, emphasis is placed on those closely related to disaster prevention and land development. The facilities for disaster prevention and development, facilities for rescue and relief, observatory, facilities for supply and processing, river and coastal structure, etc. are represented.

5. Land Condition Survey

5-1 Landform Classification

- (1) The landform classification was made mainly on the basis of the photo-interpretation of the aerial photographs taken in 1982 and 1986. Field identification was also conducted at the main sites in 1987.
- (2) With regard to artificially deformed land (mainly banked up) in lowland (flood plain, delta, coastal plain, etc.) which is susceptible to natural disasters, the landform before deformation is also represented on the basis of the comparative interpretation of aerial photographs taken in 1968, 1982 and 1986.

5-2 Ground Elevation

In the lowland area the ground elevation points are represented by minor order leveling. On the basis of those leveling points, the spot heights and microrelief lines measured by photogrammetry are also represented.

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The organization and facilities are represented on the basis of the features shown on the 1:10,000 contoured maps and the data provided by BCGS and other agencies. Field survey was also conducted by BCGS and JICA.

6. Criteria for Representation on the Land Condition Map

6-1 Landform Classification

- (1) The minimum size for the representation of landform classification is generally 2mm x 2mm on the maps and that for the linear symbols is about 5mm on the maps.
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- (1) The minor order leveling points and the spot heights measured by photogrammetry are represented by vertical and slant lettering, respectively. The values of both points are shown in meters, to the first decimal place.
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- (1) The river and coastal structures constructed across rivers of more than 4m in width or those with more than 50m in length are represented.
- (2) Regarding transportation, main roads of more than 1km in length are represented.
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- (5) The organization and facilities other than the above are represented according to the criteria for the 1:10,000 contoured maps.

6-4 Color Scheme

Printing was conducted with 12 color separation plates (brown, violet, green, yellow, orange, light green, blue, sky blue, silver gray, red, black, dark gray) and their combinations to make the various land conditions easily identifiable.

Mountain:	Brown
Piedmont Landform:	Yellow
Hill and Plateau, Terrace:	Orange-brown
Flood Plain and Valley Plain:	Light green
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Artificially Deformed Land, Unstable Slope (Landslide Scar):	Red
Landform in Marine Area:	Silver gray
Water Surface:	Sky blue
Microrelief Line:	Brown
Organization and Facilities:	Black Red
Ground Elevation, Annotation:	Black
Boundary Line, Unstable Slope (Cliff):	Violet
Base Map:	Dark gray

7. Definition of Selected Technical Terms.

- 1) Knick Line ... Lines passing points on slopes of mountain-sides, which divide upper gentle slopes and lower steep slopes.
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1. Background

To cope with many urban problems prevailing in the National Capital Region, the Philippine Government requested the Japanese Government in March 1981 for technical cooperation in the preparation of urban base maps, which represent the existing conditions of the Region in detail, as basic materials for the implementation of various public works as well as the establishment of diverse plans concerning disaster prevention, land use, urban redevelopment, etc.

In response to the request for technical cooperation, the Japanese Government sent preliminary survey teams to Manila in January through March 1985 for discussions with the authorities concerned in the Philippine Government and for field survey and data collection in the Region. The Japanese Government consequently agreed on a 4-year technical cooperation program starting in 1985.

1-1 Outline of those maps is as follows:

Contoured map (Topographic map) 1 : 10,000	1,500km ² (57 sheets)
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Land condition map 1 : 10,000	476km ² (16 sheets)

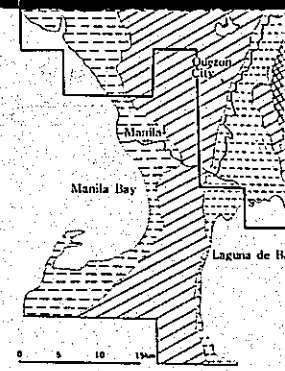
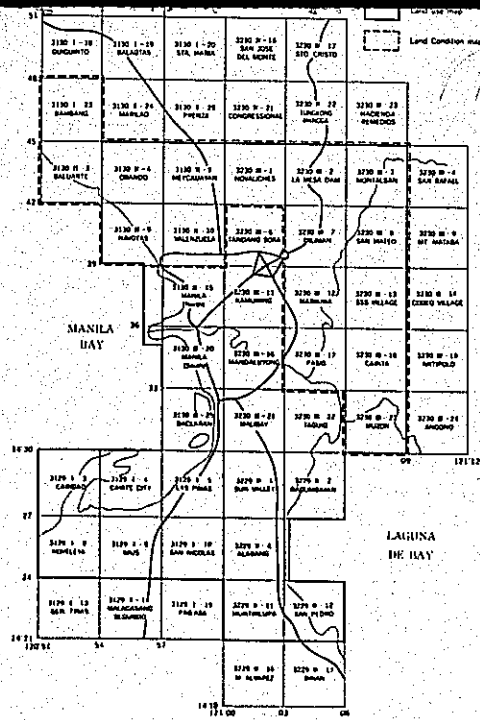
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INFORMATION AND USAGE OF THE LAND CONDITION MAP

REPUBLIC OF THE PHILIPPINES

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Around the Marikina River and Laguna de Bay, the flat lowland with an elevation of 1m ~ 10m covers wide area of floodplain.
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The mountain area has an elevation of 200m ~ 300m. The western side of the mountain area which is hilly, has an elevation of 50m ~ 100m. In the mountains where top flats still remain, gentle slopes are generally prevailing although there are steep slopes along the river valleys.

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The organization and facilities are represented on the basis of the features shown on the 1:10,000 contoured maps and the data provided by BCGS and other agencies. Field survey was also conducted by BCGS and JICA.

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6-1 Landform Classification

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- (3) The bars, tidal flats and bathymetric lines in marine areas are represented on the basis of the data provided by BCGS.

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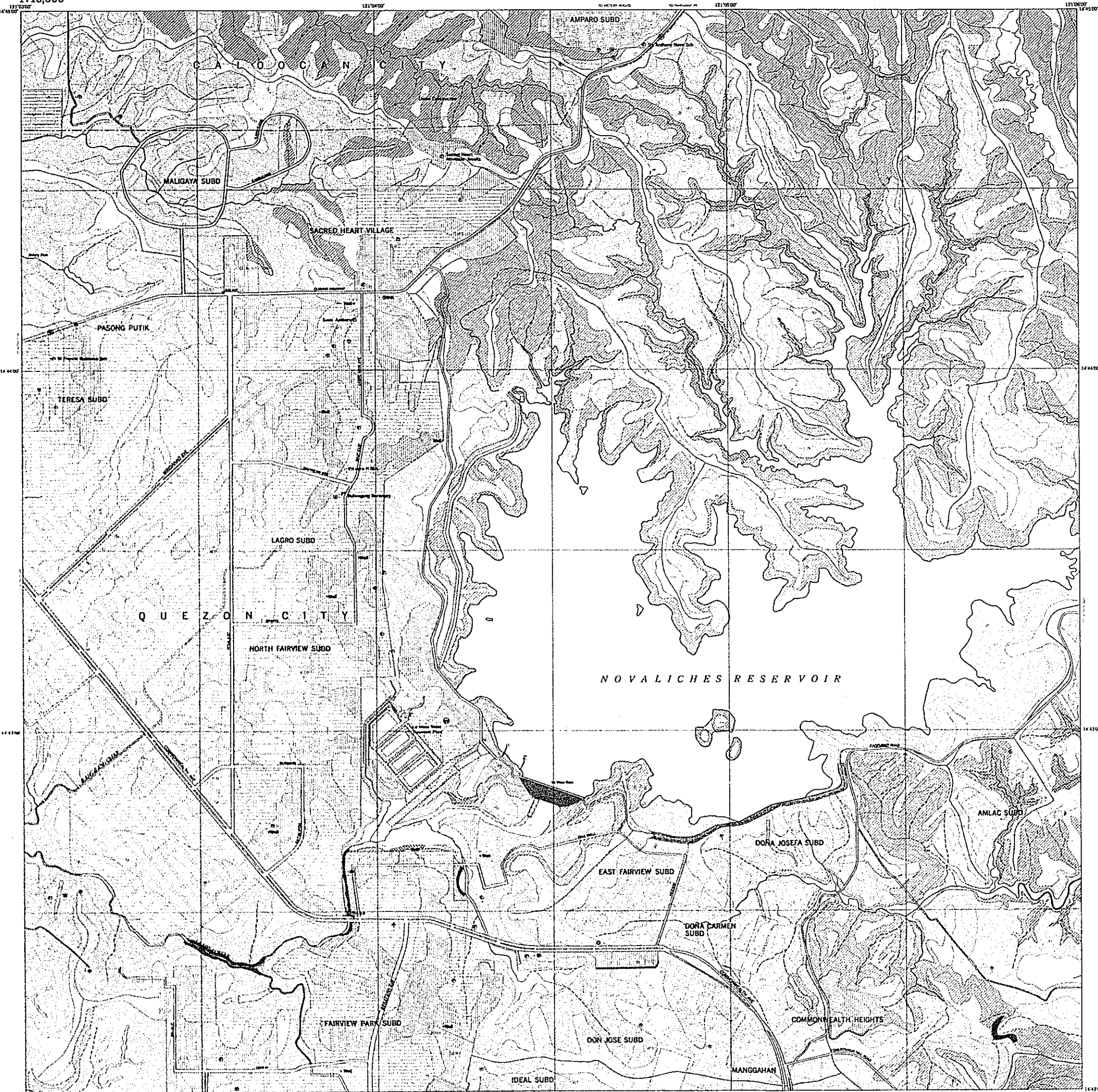
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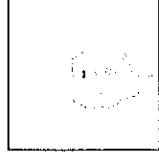
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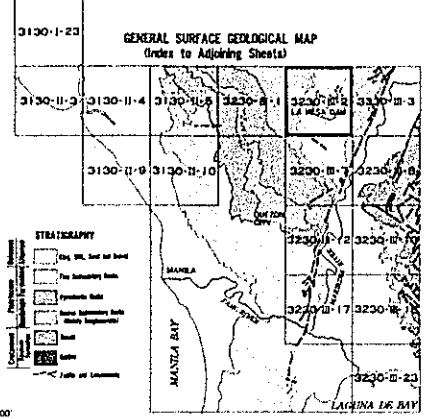


1. LANDFORM CLASSIFICATION			
MOUNTAIN LANDFORM	Top Flat and Ridge Flat	Level Slope of Grand Pen and Plateau	
	Steep Slope (Less Than About 30%)	Former River Bed	
	Steep Slope (More Than About 30%)	Natural Levee	
PIEDMONT LANDFORM	Rolling Slope	Upper Sand Bar	
	Small Alluvial Fan	Lower Sand Bar	
		Backwash	
HILL AND PLATEAU	Top Flat	CRF	
	Steep Slope (Less Than About 30%)	Unstable Scar	
	Steep Slope (More Than About 30%)	Cut and Filled Surface	
TERRACE	Low Terrace	Banked Up Surface	
	Lower Terrace	Cut Slope	
	Over and Shadow Valley	Banked Up Slope	
ALLUVIAL FAN	General Surface of Alluvial Fan	Under Construction Area	
	Former River Bed	Main Watershed	
		Drainage	
FLOOD PLAIN AND VALLEY FLOOR	Natural Levee	Water Surface	
	Backwash	Landform Boundary	
	Swamp and Marsh	Individual Landform Boundary	
		MAIRIE AREA	
		Bar	
		Tidal Flat	
		Biodynamic Line	
		Dry River Bed	
2. GROUND ELEVATION			
ELEVATION POINT	Bench Mark	0.00	Microlevel Line
	Ground Elevation Point	+1.2 to +8.8	Contour Line
3. ORGANIZATION AND PUBLIC FACILITIES			
ADMINISTRATIVE BOUNDARY	Regional Boundary		Embankment
	Physical Boundary		San
	City and Municipal Boundary		War
TRANSPORTATION	Main Road		Recreation
	Railway		Bridge
	Bus Terminal		Breakwater, Jetty and Causeway
PUBLIC BUILDING	Government Building		Flood Gate
	Police Station		Drainage Station
	Traffic Station		Wharf and Pier
FACILITIES FOR RESCUE AND RELIEF	Hospital		Lighthouse
	Health Center		Port and Harbor
	Church		Fishery Port
RESERVE FACILITIES AND OTHER FEATURES IN COASTAL AREA	School		Pipe Line and Cable on Sea Bottom
	Recreation Center		Fish Pen
	Amusement Park and other facilities of Recreational Nature		Rock Anchors or Reef
OBSERVATORY	Storage Tank		Stranded Wreck
	Tidal Station		Warm Pool and Salt Bed
	Water Level Gauge Station		Restricted Area
FACILITIES FOR SUPPLY AND PROCESSING	Rain Gauge Station		Dumping Area
	Levelling Observatory		
	Power Plant and Sub-Station		
	Water Treatment Plant		
	Over Pumping Station		
	Wall		

BOUNDARY DIAGRAM



REGION IV
1. Metro Manila



This map was produced under a cooperative arrangement between the Department of the Republic of the Philippines and the Geological Survey.

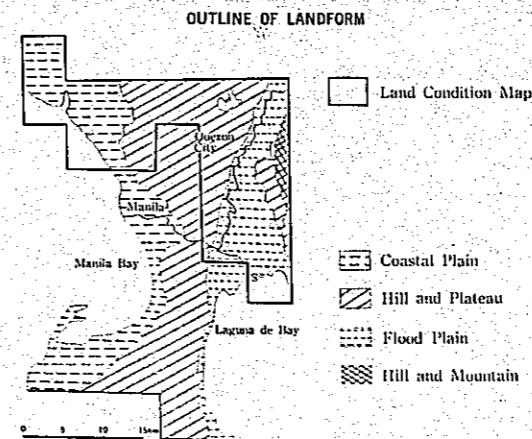
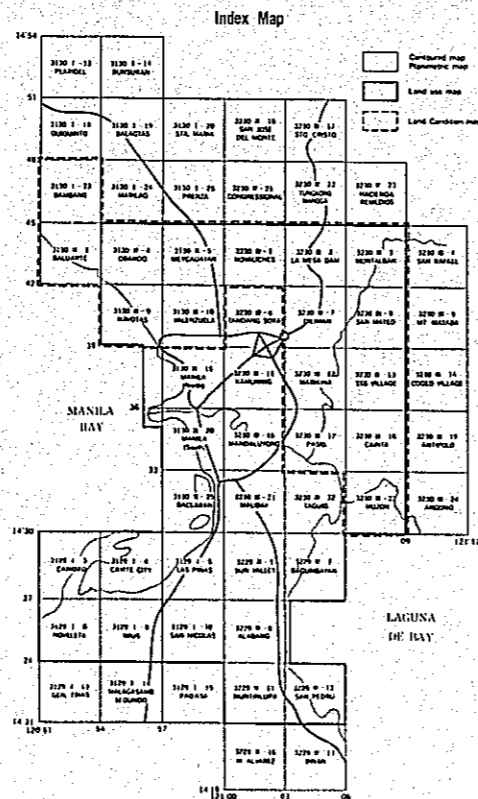
SCALE 1:10,000
0 100 200 300 400 500 600 700 800 900 1000 meters



METRO MANILA LAND CONDITION MAP
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3. Outline of Landform

The classes of landforms in the survey area are generally located as follows:

- 3-1 Coastal Plain
Coastal plain with elevation of less than 3m extending north to south along Manila Bay.
- 3-2 Hill and Plateau
The hills and plateaus, where Quezon City Mandaluyong and Makati are located, extending north to south on the eastern side of the coastal plain. Elevations of the hills and plateaus around Pasig River are 20m~30m and gradually increase northward to 80m~100m.
- 3-3 Flood Plain
Around the Marikina River and Laguna de Bay, the flat lowland with an elevation of 1m~10m covers wide area of floodplain.
- 3-4 Hill and Mountain
The mountain area has an elevation of 200m~300m. The western side of the mountain area which is hilly, has an elevation of 50m~100m. In the mountains where top flats still remain, gentle slopes are generally prevailing although there are steep slopes along the river valleys.

1. Background

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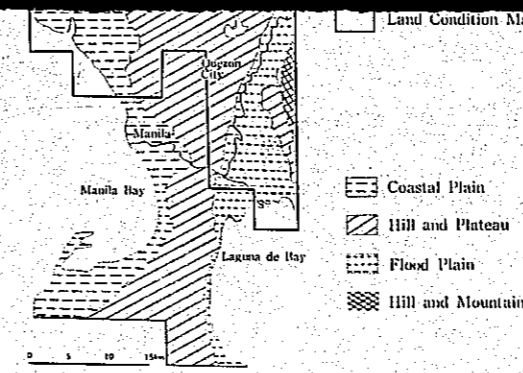
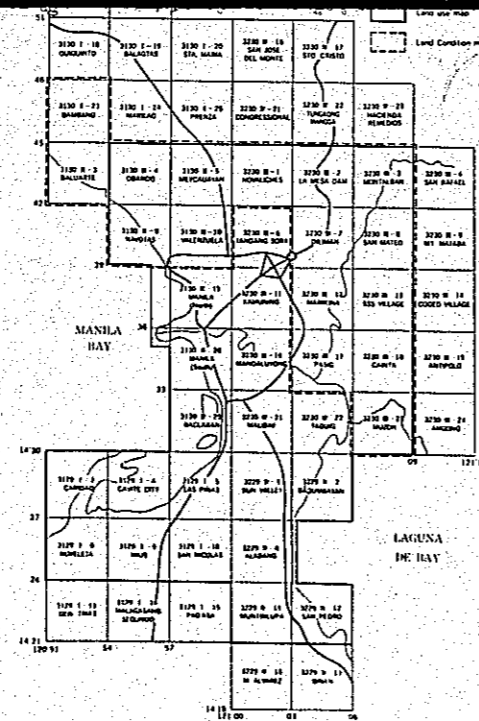
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INFORMATION AND USAGE OF THE LAND CONDITION MAP

REPUBLIC OF THE PHILIPPINES

2. Utilization of Land Condition Map

This land condition map is prepared using the 1:10,000 contoured map as the base on which the landform classification, ground elevation, organizations and facilities are printed in 12 colors.

It is possible to find out the following areas by reading the land condition map:

- 2-1 Areas affected by flood or high tide such as low or marshy land.
- 2-2 Areas where earthquake damage is expected due to unfavourable conditions of the surface layer.
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The mountain area has an elevation of 200m-300m. The western side of the mountain area which is hilly, has an elevation of 50m-100m. In the mountains where top flats still remain, gentle slopes are generally prevailing although there are steep slopes along the river valleys.

4. Components of the Land Condition Map

The land condition map is composed of the following three major categories:

- Landform Classification,
- Ground Elevation,
- Organization and Facilities

These categories are then divided into 91 sub-classifications.

4-1 Landform Classification

As for the landform classification, various types of landform are classified into mountain, hill and plateau, lowland (flood plain, delta and others), etc. according to the form, formative processes and surface materials. In the detailed classification, the safety or susceptibility to disasters is also taken into account.

4-2 Ground Elevation

In the lowland area the ground elevation points and microrelief lines are shown in order to clarify its susceptibility to flooding and high tides.

4-3 Organization and Facilities

Regarding organization and facilities, emphasis is placed on those closely related to disaster prevention and land development. The facilities for disaster prevention and development, facilities for rescue and relief, observatory, facilities for supply and processing, river and coastal structure, etc. are represented.

5. Land Condition Survey

5-1 Landform Classification

(1) The landform classification was made mainly on the basis of the photo-interpretation of the aerial photographs taken in 1982 and 1986. Field identification was also conducted at the main sites in 1987.

(2) With regard to artificially deformed land (mainly banked up) in lowland (flood plain, delta, coastal plain, etc.) which is susceptible to natural disasters, the landform before deformation is also represented on the basis of the comparative interpretation of aerial photographs taken in 1968, 1982 and 1986.

5-2 Ground Elevation

In the lowland area the ground elevation points are represented by minor order leveling. On the basis of those leveling points, the spot heights and microrelief lines measured by photogrammetry are also represented.

5-3 Organization and Facilities

The organization and facilities are represented on the basis of the features shown on the 1:10,000 contoured maps and the data provided by BCGS and other agencies. Field survey was also conducted by BCGS and JICA.

6. Criteria for Representation on the Land Condition Map

6-1 Landform Classification

- (1) The minimum size for the representation of landform classification is generally 2mm x 2mm on the maps and that for the linear symbols is about 5mm on the maps.
- (2) The boundaries of the areas where the landform classification, not clearly defined are delineated by broken lines.
- (3) The bars, tidal flats and bathymetric lines in marine areas are represented on the basis of the data provided by BCGS.

respectively. The values of both points are shown in meters, to the first decimal place.

(2) The microrelief lines are represented at 1m intervals.

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- (1) The river and coastal structures constructed across rivers of more than 4m in width or those with more than 50m in length are represented.
- (2) Regarding transportation, main roads of more than 1km in length are represented.
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6-4 Color Scheme

Printing was conducted with 12 color separation plates (brown, violet, green, yellow, orange, light green, blue, sky blue, silver gray, red, black, dark gray) and their combinations to make the various land conditions easily identifiable.

Mountain:	Brown
Piedmont Landform:	Yellow
Hill and Plateau, Terrace:	Orange-brown
Flood Plain and Valley Plain:	Light green
Coastal Plain and Delta:	Blue-green
Artificially Deformed Land, Unstable	
Slope (Landslide Scar):	Red
Landform in Marine Area:	Silver gray
Water Surface:	Sky blue
Microrelief Line:	Brown
Organization and Facilities:	Black, Red
Ground Elevation, Annotation:	Black
Boundary Line, Unstable Slope (Cliff):	Violet
Base Map:	Dark gray

7. Definition of Selected Technical Terms

- 1) Knick Line . . . Lines passing points on slopes of mountain-sides, which divide upper gentle slopes and lower steep slopes.
- 2) Talus . . . Relatively steep depositional surfaces formed at lower parts of mountain-slopes by rain wash or land slide and consisting of larger grains of debris.
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- 6) Dent and . . . Shallow depressions on the surface of terraces.
- Shallow Valley
- 7) Natural Levee . . . Strip microrelief located along or around rivers which is composed of sand and silt deposits made during floods.
- 8) Backmarsh . . . Lowland relatively free from alluviation of rivers and poorly drained because of location behind natural levees and others.
- 9) Upper Sand . . . Microrelief located along the former and present coast, composed of sand and gravel, and formed by sedimentation and action of ocean waves and coastal currents.
- Bar
- 10) Landslide Scar . . . Vestiges of radical sliding of large masses of earth down slopes or cliffs.
- 11) Filled Up . . . Artificial land formed by filling marshes, lakes or riverbeds to the level of the surrounding surfaces.
- Surface
- 12) Main . . . Main ridges of mountains and hills including those of several drainage basins which collect to a common basin.
- Watershed
- 13) Tidal Flat . . . Shallow water areas with mud beds which are exposed at low tide.
- 14) Microrelief . . . Lines depicting detailed landform elevation in lowland.
- Line
- 15) Bathymetric . . . Lines connecting points at equal depth in the sea area.
- Line

1. Background

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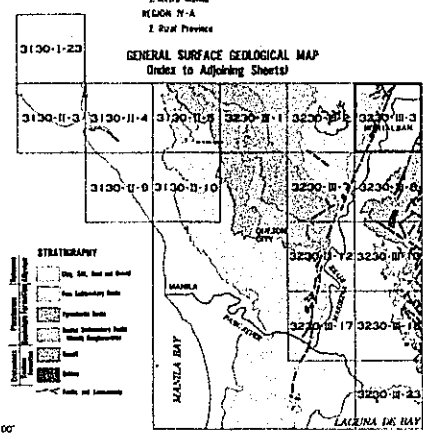
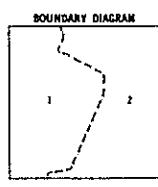
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1. LANDFORM CLASSIFICATION			
MOUNTAIN	Top Flat and Ridge Flat		Upper Surface of Coastal Plain and Delta
	Steep Slope (Less Than About 20%)		Lower Surface of Coastal Plain and Delta
	Steep Slope (More Than About 20%)		Upper Sand Bar
MOUNTAIN	Rolling Slope		Lower Sand Bar
	Colluvial Slope		Backmarsh
	Small Alluvial Fan		Cliff
HILL AND PLATEAU	Top Flat		Landslide Scar
	Shallow Slope (Less Than About 5%)		Cut and Raked Surface
	Shallow Slope (Between About 5% and 20%)		Banked Up Surface
TERRACE	Steep Slope (More Than About 20%)		Cut Slope
	Valley Flat		Banked Up Slope
	Low Terrace		Flashed Up Surface
ALLUVIAL FAN	Low Terrace		Under Construction Area
	Chert and Shallow Valley		Main Waterhead
	General Surface of Alluvial Fan		Drainage
FLOOD PLAIN AND VALLEY PLAIN	General Surface of Alluvial Fan		Water Surface
	Former River Bed		Landform Boundary
	Natural Levee		Individual Landform Boundary
FLOOD PLAIN AND VALLEY PLAIN	Backmarsh		Bar
	Swamp and Marsh		Tidal Flat
	Dry River Bed		Subaqueous Line
2. GROUND ELEVATION			
GROUND ELEVATION POINT	Bench Mark		Microrelief Line
	Ground Elevation Point		Contour Line
3. ORGANIZATION AND PUBLIC FACILITIES			
ADMINISTRATIVE BOUNDARY	Regional Boundary		Landmark
	Provincial Boundary		Dam
	City and Municipal Boundary		Well
TRANSPORTATION	Main Road		Development
	Railway		Bridge
	Bus Terminal		Breakwater, Wharf and Quay
FACILITIES FOR RESCUE AND RELIEF	Government Building		Flood Gate
	Police Station		Drainage Station
	Fire Station		Wharf and Pier
FACILITIES FOR INDUSTRIAL USE	Hospital		Lighthouse
	Health Center		Port and Harbor
	Church		Fishery Pier
FACILITIES FOR OTHER USES	School		Pipe Line and Cable on Sea Bottom
	Rescue Center		Fish Pier
	Warehousing Storage and Loading Facility of Transport Medium		Rock Breaker or Reef
OBSERVATORY	Storage Tank		Stranded Wreck
	Tidal Station		Shoaling Pond and Salt Bed
	Water Level Gauge Station		Restricted Area
FACILITIES FOR SUPPLY AND PROTECTION	Rain Gauge Station		Dumping Area
	Earthquake Observatory		
	Power Plant and Sub-Station		
	Water Treatment Plant		
	River Pumping Station		
	Well		



This map was prepared under a cooperative undertaking between the Department of the Republic of the Philippines and the Geological Survey.

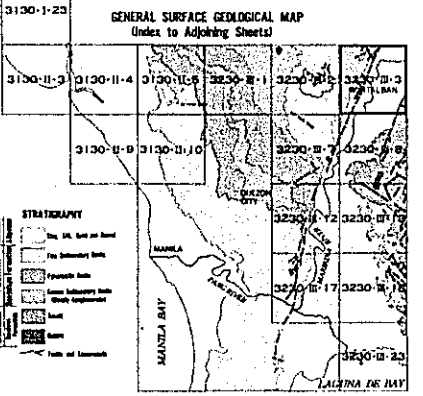
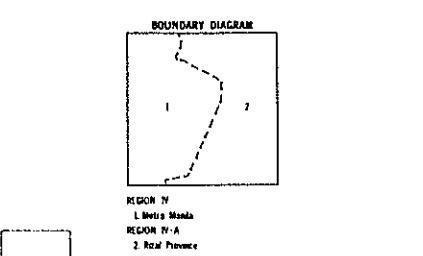
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LANDFORM	SYMBOL	COASTAL PLAIN AND DELTA
Top Flat and High Flat	[Symbol]	Lower Surface of Coastal Plain and Delta
Gentle Slope (Less Than About 5%)	[Symbol]	Former River Bed
Moderate Slope (Between About 5% and 20%)	[Symbol]	Natural Levee
Steep Slope (More Than About 20%)	[Symbol]	Upper Sand Bar
Cliff Line	[Symbol]	Lower Sand Bar
Table	[Symbol]	Backmarsh
Conical Slope	[Symbol]	Cliff
Small Alluvial Fan	[Symbol]	Landslide Scar
Top Flat	[Symbol]	Cut and Rolled Surface
Gentle Slope (Less Than About 5%)	[Symbol]	Banked Up Surface
Moderate Slope (Between About 5% and 20%)	[Symbol]	Cut Slope
Steep Slope (More Than About 20%)	[Symbol]	Banked Up Slope
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Low Terrace	[Symbol]	Under Construction Area
Lower Terrace	[Symbol]	Main Watershed
Short and Shallow Valley	[Symbol]	Drainage
General Surface of Alluvial Fan	[Symbol]	Water Surface
Former River Bed	[Symbol]	Landform Boundary
Seaward Slope of Head Pin and Tail Pin	[Symbol]	Indirect Landform Boundary
Former River Bed	[Symbol]	Bar
Natural Levee	[Symbol]	Tidal Flat
Backmarsh	[Symbol]	Bathymetric Line
Swamp and Marsh	[Symbol]	
Dry River Bed	[Symbol]	

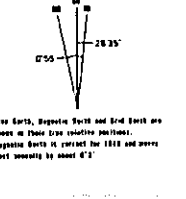
2. GROUND ELEVATION	
Bench Mark (± 0.2)	Microrelief Line
Ground Elevation Point (± 0.2)	Contour Line
Spot Elevation (± 0.5)	

3. ORGANIZATION AND PUBLIC FACILITIES	
ADMINISTRATIVE BOUNDARY	EMPHASIS
Regional Boundary	Embankment
Provincial Boundary	Canal
City and Municipality Boundary	War
TRANSPORTATION	RECREATION AND CULTURAL STRUCTURE
Main Road	Amusement
Roadway	Religious
Bus Terminal	Memorial, City and Cemetery
Government Building	Flood Gate
Police Station	Drainage Station
Fire Station	Wharf and Pier
Health Center	Lighthouse
Church	Port and Harbor
School	Fishery Port
Recreation Center	Pipe Line and Cable on Sea Bottom
INDUSTRIAL AND COMMERCIAL	FACILITIES AND OTHER FEATURES IN COASTAL AREA
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Storage Tank	Stranded Wreck
Fish Station	Marine Pines and Salt Bed
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This map was prepared under a cooperative understanding between the Department of the Interior and the Department of Geology. Contoured map 1987 (GENS-1987). Aerial Photography: 1950-1952, 1953 & 1954. Photo courtesy of AECG & DGS. Other sources of information: DEED, DEDM, SPMS, LEO, SPDS, BORS, PATROL, SMO & ILS of DP. Distributed by National Mapping and Research Information Center (NMRIC). City: Manila, Quezon, Marikina, Baguio, Davao. © COPYRIGHT RESERVED

SCALE 1:10,000
 0 100 200 300 400 500 600 700 800 900 1000 meters
 UNIVERSAL TRANSVERSE MERCATOR PROJECTION
 ZONE 51 CLARKE SPHEROID 1866 LUZON DATUM
 VERTICAL DATUM: MSL FOR HEIGHTS MLLW FOR DEPTHS
 CONTOUR INTERVAL 4 METERS



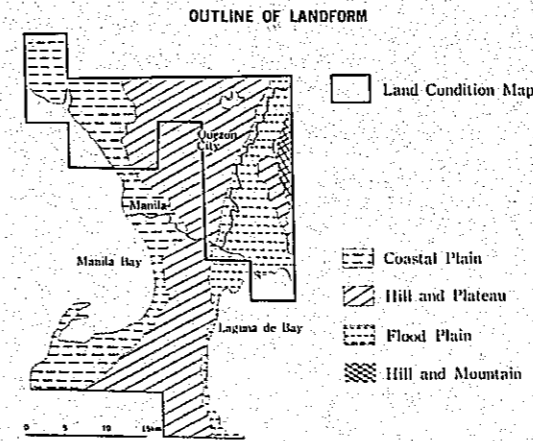
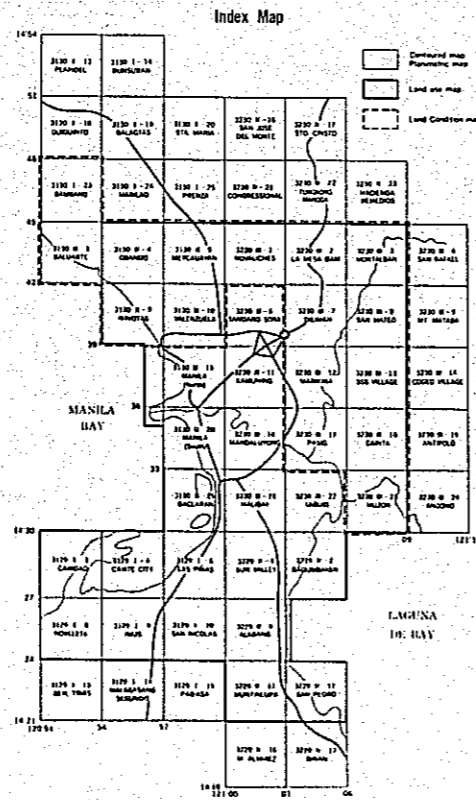
MONTALBAN
 Sheet No. 3230-III-3



METRO MANILA LAND CONDITION MAP
SCALE 1 : 10,000

INFORMATION AND USAGE OF
THE LAND CONDITION MAP

REPUBLIC OF THE PHILIPPINES



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The land condition map is composed of the following three major categories:

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Microrelief Line:	Brown
Organization and Facilities:	Black, Red
Ground Elevation, Annotation:	Black
Boundary Line, Unstable Slope (Cliff):	Violet
Base Map:	Dark gray

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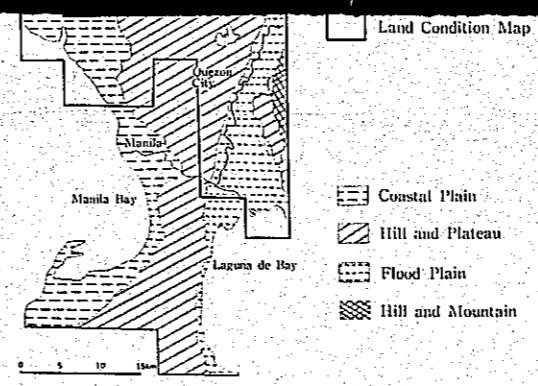
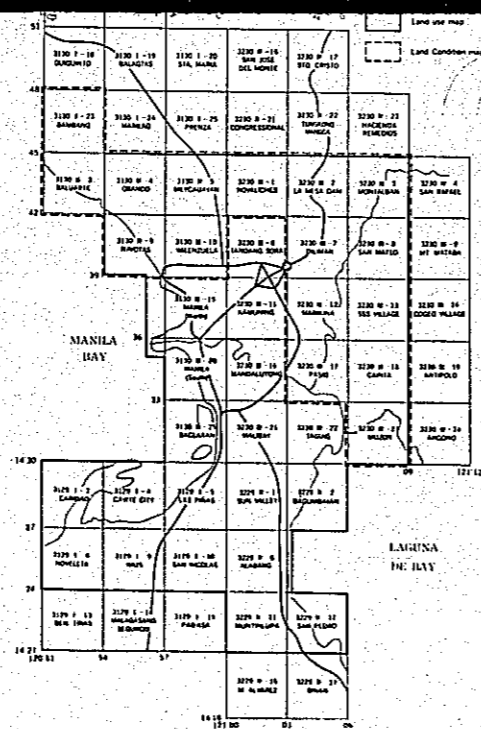
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INFORMATION AND USAGE OF THE LAND CONDITION MAP

REPUBLIC OF THE PHILIPPINES

1. Background

To cope with many urban problems prevailing in the National Capital Region, the Philippine Government requested the Japanese Government in March 1981 for technical cooperation in the preparation of urban base maps, which represent the existing conditions of the Region in detail, as basic materials for the implementation of various public works as well as the establishment of diverse plans concerning disaster prevention, land use, urban redevelopment, etc.

In response to the request for technical cooperation, the Japanese Government sent preliminary survey teams to Manila in January through March 1985 for discussions with the authorities concerned in the Philippine Government and for field survey and data collection in the Region. The Japanese Government consequently agreed on a 4-year technical cooperation program starting in 1985.

1-1 Outline of those maps is as follows:

Contoured map (Topographic map)	1 : 10,000	1,500km ² (57 sheets)
Planimetric map	1 : 10,000	1,500km ² (57 sheets)
Land use map	1 : 10,000	823km ² (33 sheets)
Land condition map	1 : 10,000	476km ² (16 sheets)

(see Index Map)

1-2 The contoured map was completed in 1987. The aerial photographs taken in 1982 were used for field identification and stereo plotting. As for the major changes after aerial photography, the results of field completion conducted in 1986 and the interpretation of the aerial photographs taken in the same year were integrated.

1-3 The planimetric map was completed in 1987 by the combination of color separation plates of the contoured map.

1-4 The land use map was completed in 1989 using the contoured map as the base and integrating mainly the interpretation of the aerial photographs taken in 1982 and the results of field identification conducted in 1985.

1-5 The land condition map was completed in 1989 to represent landform classification, ground elevation, organization and facilities using the contoured map as the base. The representation was made mainly on the basis of the interpretation of the aerial photographs taken in 1982 and 1986, the field identification conducted in 1985 and the data provided by the agencies concerned in the Philippines.

2. Utilization of Land Condition Map

This land condition map is prepared using the 1:10,000 contoured map as the base on which the landform classification, ground elevation, organizations and facilities are printed in 12 colors.

It is possible to find out the following areas by reading the land condition map:

- 2-1 Areas affected by flood or high tide such as low or marshy land.
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Therefore, the land condition map can provide basic information not only for disaster prevention but also for land development, and can be utilized more effectively together with the land use map.

3. Outline of Landform

The classes of landforms in the survey area are generally located as follows:

- 3-1 Coastal Plain
Coastal plain with elevation of less than 3m extending north to south along Manila Bay.
- 3-2 Hill and Plateau
The hills and plateaus, where Quezon City, Mandaluyong and Makati are located, extending north to south on the eastern side of the coastal plain. Elevations of the hills and plateaus around Pasig River are 20m-30m and gradually increase northward to 80m-100m.
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The mountain area has an elevation of 200m-300m. The western side of the mountain area which is hilly, has an elevation of 50m-100m. In the mountains where top flats still remain, gentle slopes are generally prevailing although there are steep slopes along the river valleys.

4. Components of the Land Condition Map

The land condition map is composed of the following three major categories:

- Landform Classification,
- Ground Elevation,
- Organization and Facilities

These categories are then divided into 91 sub-classifications.

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As for the landform classification, various types of landform are classified into mountain, hill and plateau, lowland (flood plain, delta and others), etc. according to the form, formative processes and surface materials. In the detailed classification, the safety or susceptibility to disasters is also taken into account.

4-2 Ground Elevation

In the lowland area the ground elevation points and microrelief lines are shown in order to clarify its susceptibility to flooding and high tides.

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Regarding organization and facilities, emphasis is placed on those closely related to disaster prevention and land development. The facilities for disaster prevention and development, facilities for rescue and relief, observatory, facilities for supply and processing, river and coastal structure, etc. are represented.

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(1) The landform classification was made mainly on the basis of the photo-interpretation of the aerial photographs taken in 1982 and 1986. Field identification was also conducted at the main sites in 1987.

(2) With regard to artificially deformed land (mainly banked up) in lowland (flood plain, delta, coastal plain, etc.) which is susceptible to natural disasters, the landform before deformation is also represented on the basis of the comparative interpretation of aerial photographs taken in 1968, 1982 and 1986.

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In the lowland area the ground elevation points are represented by minor order leveling. On the basis of those leveling points, the spot heights and microrelief lines measured by photogrammetry are also represented.

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The organization and facilities are represented on the basis of the features shown on the 1:10,000 contoured maps and the data provided by BCGS and other agencies. Field survey was also conducted by BCGS and JICA.

6. Criteria for Representation on the Land Condition Map

6-1 Landform Classification

- (1) The minimum size for the representation of landform classification is generally 2mm x 2mm on the maps and that for the linear symbols is about 5mm on the maps.
- (2) The boundaries of the areas where the landform classification not clearly defined are delineated by broken lines.
- (3) The bars, tidal flats and bathymetric lines in marine areas are represented on the basis of the data provided by BCGS.

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- (5) The organization and facilities other than the above, are represented according to the criteria for the 1:10,000 contoured maps.

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Printing was conducted with 12 color separation plates (brown, violet, green, yellow, orange, light green, blue, sky blue, silver gray, red, black, dark gray) and their combinations to make the various land conditions easily identifiable.

Mountain:	Brown
Piedmont Landform:	Yellow
Hill and Plateau, Terrace:	Orange-brown
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Landform in Marine Area:	Silver gray
Water Surface:	Sky blue
Microrelief Line:	Brown
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Ground Elevation, Annotation:	Black
Boundary Line, Unstable Slope (Cliff):	Violet
Base Map:	Dark gray

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- 1) Knick Line ... Lines passing points on slopes of mountain-sides, which divide upper gentle slopes and lower steep slopes.
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INDUSTRIAL LANDFORM	Top Flat and Ridge Flat	Small Shallow of Great
PREMONT	Gentle and Moderate Slope (Less Than About 2%)	Former River Bed
	Steep Slope (More Than About 2%)	Natural Levee
HILL AND PLATEAU	Top Flat	Upper Sand Bar
	Gentle Slope (Less Than About 5%)	Lower Sand Bar
TERRACE	Moderate Slope (Between About 5% and 20%)	Backwash
	Steep Slope (More Than About 20%)	Artificially Deformed Land
ALLUVIAL FAN	Valley Flat	Under Construction Area
	Low Terrace	Main Waterbed
FLOOD PLAIN AND VALLEY FAN	Lower Terrace	Drainage
	Overlapped and Shallow Valley	Water Surface
COASTAL PLAIN AND DELTA	General Surface of Alluvial Fan	Landform Boundary
	Former River Bed	Indistinct Landform Boundary
FLUVID PLAIN AND VALLEY FAN	General Surface of Alluvial Fan	Bar
	Former River Bed	Tidal Flat
OTHERS	General Surface of Alluvial Fan	Earthquake Line
	Former River Bed	

2. GROUND ELEVATION	
Beach Mark	Micro Relief Line
Drowned Elevation Point	Custom Line

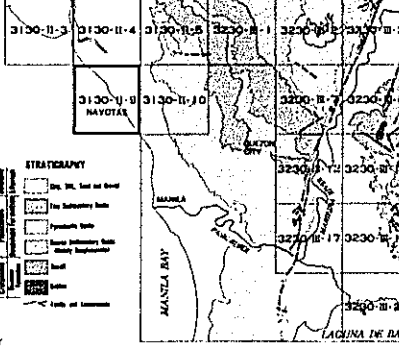
3. ORGANIZATION AND PUBLIC FACILITIES		
ADMINISTRATIVE BOUNDARY	Regional Boundary	Embankment
TRANSPORTATION	Provincial Boundary	Shoal
	City and Municipal Boundary	Wharf
UTILITIES	Main Road	Revetment
	Railway	Bridge
FACILITIES FOR RESCUE AND RELIEF	Bus Terminal	Breakwater, Jetty and Causeway
	Government Building	Flood Gate
FACILITIES FOR NATURAL FEATURE IN COASTAL AREA	Police Station	Drainage Station
	Theo Station	Wharf and Pier
FACILITIES FOR SUPPLY AND PROCESSING	Hospital	Lighthouse
	Health Center	Port and Harbor
OTHERS	Church	Fishery Port
	School	Pier Line and Cable on Sea Bottom
OTHERS	Recreation Center	Fish Pen
	Monitoring Station and Warning Station of Tsunami	Rock Beach or Reef
OTHERS	Storage Tank	Stranded Wreck
	Tidal Station	Marine Pond and Salt Bed
OTHERS	Water Level Gauge Station	Restricted Area
	Rain Gauge Station	Dumping Area
OTHERS	Earthquake Observatory	
	Power Plant and Sub-Station	
OTHERS	Water Treatment Plant	
	River Pumping Station	
OTHERS	Well	

BOUNDARY DIAGRAM



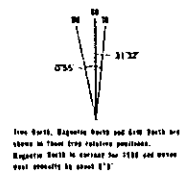
REGION III
1. Manila Province
REGION IV
2. Nueva Manila

GENERAL SURFACE GEOLOGICAL MAP (Order to Adjoining Sheets)



This map was produced under a cooperative arrangement between the Department of the Environment and the Government of Japan.
Data Base: Contoured map 1967 (4000-1500), Coastal Photography, 1958-1960, 1963 & 1968
Field surveys by PDS & JICA 1982
Other sources of information: MSS, LADM, DFM, GED, NCC, NMS, PATEROS, 1968 & 1969
Distributed by National Mapping and Research Information Center (NMRIC)
Field Office: Zamboanga, Manila, Metro Manila
COPYRIGHT © 1982

SCALE 1:10,000
UNIVERSAL TRANSVERSE MERCATOR PROJECTION
ZONE 51 CLARKE SPHEROID 1866 LUZON DATUM
VERTICAL DATUM: MSL FOR HEIGHTS MLLW FOR DEPTHS
CONTOUR INTERVAL 4 METERS



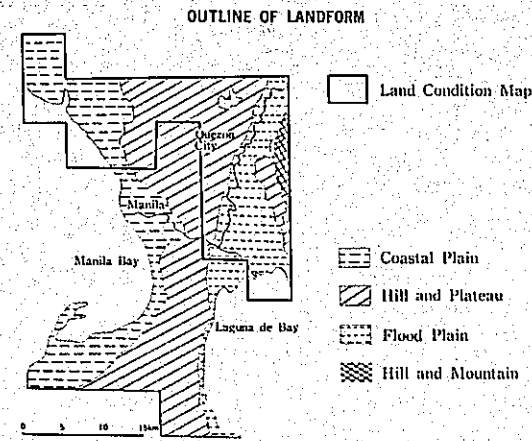
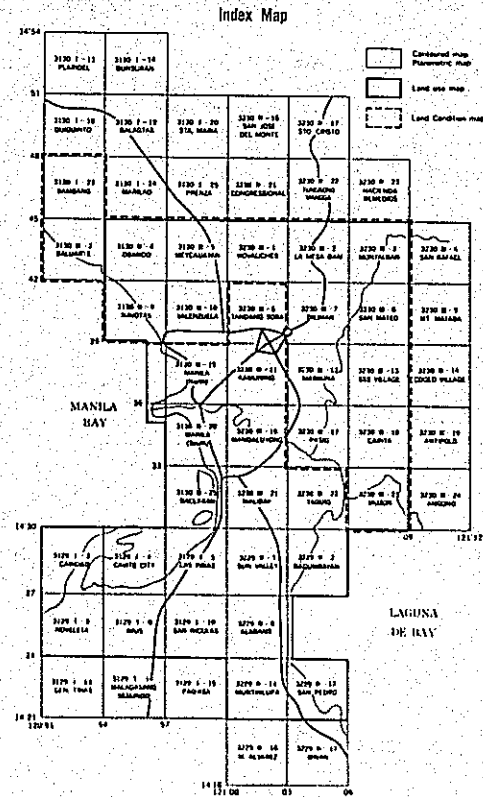
NAVOTAS
Sheet No. 3130-II-9



METRO MANILA LAND CONDITION MAP
SCALE 1 : 10,000

**INFORMATION AND USAGE OF
THE LAND CONDITION MAP**

REPUBLIC OF THE PHILIPPINES



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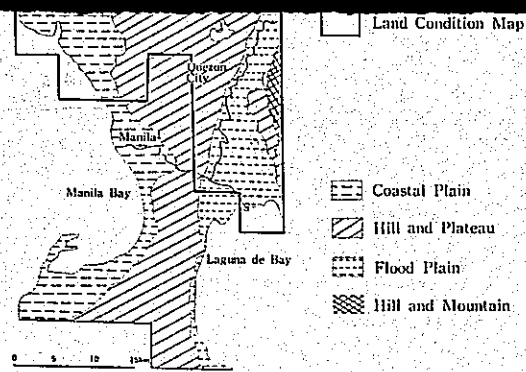
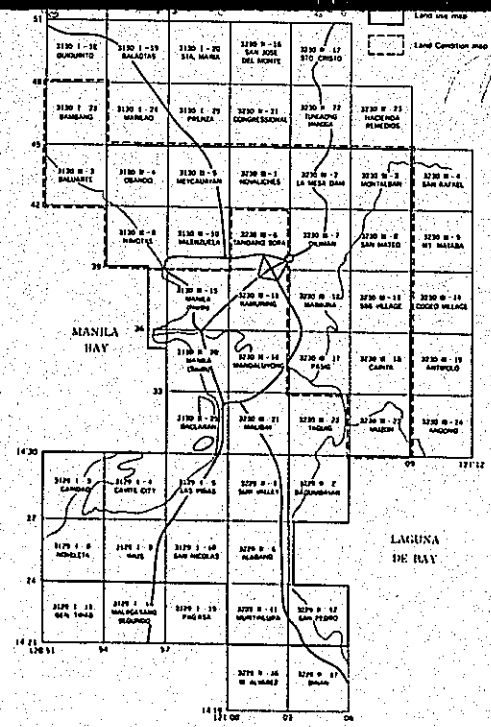
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- 5) Valley Flat ... Flat surfaces located along river tributaries, where bed rock is partially covered by shallow fluvial deposits.
- 6) Dent and Shallow Valley ... Shallow depressions on the surface of terraces.
- 7) Natural Levee ... Strip microrelief located along or around rivers which is composed of sand and silt deposits made during floods.
- 8) Backmarsh ... Lowland relatively free from alluviation of rivers and poorly drained because of location behind natural levees and others.
- 9) Upper Sand Bar ... Microrelief located along the former and present coast, composed of sand and gravel, and formed by sedimentation and action of ocean waves and coastal currents.
- 10) Landslide Scar ... Vestiges of radical sliding of large masses of earth down slopes or cliffs.
- 11) Filled Up Surface ... Artificial land formed by filling marshes, lakes or river beds to the level of the surrounding surfaces.
- 12) Main Watershed ... Main ridges of mountains and hills including those of several drainage basins which collect to a common basin.
- 13) Tidal Flat ... Shallow water areas with mud beds which are exposed at low tide.
- 14) Microrelief Line ... Lines depicting detailed landform elevation in lowland.
- 15) Bathymetric Line ... Lines connecting points at equal depth in the sea area.

1. Background

To cope with many urban problems prevailing in the National Capital Region, the Philippine Government requested the Japanese Government in March 1984 for technical cooperation in the preparation of urban base maps, which represent the existing conditions of the Region in detail, as basic materials for the implementation of various public works as well as the establishment of diverse plans concerning disaster prevention, land use, urban redevelopment, etc.

In response to the request for technical cooperation, the Japanese Government sent preliminary survey teams to Manila in January through March 1985 for discussions with the authorities concerned in the Philippine Government and for field survey and data collection in the Region. The Japanese Government consequently agreed on a 4-year technical cooperation program starting in 1985.

1-1 Outline of these maps is as follows:

Contoured map (Topographic map)	1 : 10,000	1,500km ² (57 sheets)
Planimetric map	1 : 10,000	1,500km ² (57 sheets)
Land use map	1 : 10,000	820km ² (33 sheets)
Land condition map	1 : 10,000	478km ² (16 sheets)

(see Index Map)

1-2 The contoured map was completed in 1987. The aerial photographs taken in 1982 were used for field identification and stereo plotting. As for the major changes after aerial photography, the results of field completion conducted in 1986 and the interpretation of the aerial photographs taken in the same year were integrated.

1-3 The planimetric map was completed in 1987 by the combination of color separation plates of the contoured map.

1-4 The land use map was completed in 1989 using the contoured map as the base and integrating mainly the interpretation of the aerial photographs taken in 1982 and the results of field identification conducted in 1985.

1-5 The land condition map was completed in 1989 to represent landform classification, ground elevation, organization and facilities using the contoured map as the base. The representation was made mainly on the basis of the interpretation of the aerial photographs taken in 1982 and 1986, the field identification conducted in 1985 and the data provided by the agencies concerned in the Philippines.



1. LANDFORM CLASSIFICATION

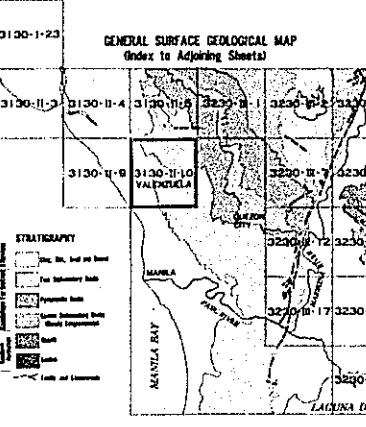
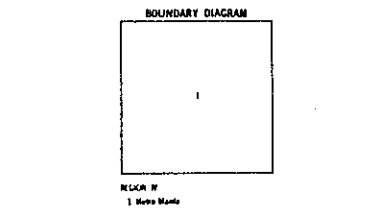
LANDFORM CLASSIFICATION	SYMBOL	DESCRIPTION
MOUNTAIN	[Symbol]	Top Flat and Ridge Flat
MOUNTAIN	[Symbol]	Gentle and Moderate Slope (Less Than About 20°)
	[Symbol]	Steep Slope (More Than About 20°)
	[Symbol]	Very Steep Slope (More Than About 30°)
PREMOUNTAIN	[Symbol]	Small Alluvial Fan
HILL AND PLATEAU	[Symbol]	Top Flat
	[Symbol]	Gentle Slope (Less Than About 5°)
	[Symbol]	Moderate Slope (Between About 5° and 20°)
HILL AND PLATEAU	[Symbol]	Steep Slope (More Than About 20°)
	[Symbol]	Very Steep Slope (More Than About 30°)
	[Symbol]	Valley Flat
TERRACE	[Symbol]	Low Terrace
	[Symbol]	Deer and Shallow Valley
	[Symbol]	General Surface of Alluvial Fan
ALLUVIAL FAN	[Symbol]	Former River Bed
	[Symbol]	General Surface of Alluvial Fan
	[Symbol]	Former River Bed
FLOOD PLAIN AND VALLEY PLAIN	[Symbol]	Natural Level
	[Symbol]	Backmarsh
	[Symbol]	Swamp and Marsh
FLOOD PLAIN AND VALLEY PLAIN	[Symbol]	Dry River Bed
	[Symbol]	Artificially Deformed Land
	[Symbol]	Artificially Deformed Land
COASTAL PLAIN AND DELTA	[Symbol]	Former River Bed
	[Symbol]	Upper Sand Bar
	[Symbol]	Lower Sand Bar
COASTAL PLAIN AND DELTA	[Symbol]	Backmarsh
	[Symbol]	Bar
	[Symbol]	Tidal Flat
UNSTABLE SLOPE	[Symbol]	Landslide Scar
	[Symbol]	Cut and Rolled Surface
	[Symbol]	Banked Up Surface
ARTIFICIALLY DEFORMED LAND	[Symbol]	Cut Slope
	[Symbol]	Banked Up Slope
	[Symbol]	Filled Up Surface
OTHERS	[Symbol]	Under Construction Area
	[Symbol]	Main Waterbed
	[Symbol]	Water Surface
MARGINE AREA	[Symbol]	Landform Boundary
	[Symbol]	Indistinct Landform Boundary
	[Symbol]	Bar
MARGINE AREA	[Symbol]	Tidal Flat
	[Symbol]	Bar
	[Symbol]	Hydrographic Line

2. GROUND ELEVATION

GROUND ELEVATION	SYMBOL	DESCRIPTION
Bench Mark	0.3.3.1	Microlevel Line
Ground Elevation Point	1.2. 8.8	Contour Line

3. ORGANIZATION AND PUBLIC FACILITIES

ORGANIZATION AND PUBLIC FACILITIES	SYMBOL	DESCRIPTION
Regional Boundary	[Symbol]	Embarkment
Provincial Boundary	[Symbol]	Canal
City and Municipal Boundary	[Symbol]	Water
Main Road	[Symbol]	Recreation
Roadway	[Symbol]	Bridge
Bus Terminal	[Symbol]	Breakwater, Jetty and Causeway
Government Building	[Symbol]	Flood Gate
Police Station	[Symbol]	Drainage Station
Fire Station	[Symbol]	Wharf and Pier
Hospital	[Symbol]	Lighthouse
Health Center	[Symbol]	Port and Harbor
Church	[Symbol]	Fishery Port
School	[Symbol]	Pier Line and Cable on Sea Bottom
Recreation Center	[Symbol]	Fish Pen
Industrial Building	[Symbol]	Rock Anchors at Reef
Storage Tank	[Symbol]	Stranded Wreck
Tidal Station	[Symbol]	Marine Piers and Salt Bed
Water Level Gauge Station	[Symbol]	Restricted Area
Rain Gauge Station	[Symbol]	Dumping Area
Cartographic Observatory	[Symbol]	
Power Plant and Sub-Station	[Symbol]	
Water Treatment Plant	[Symbol]	
Rever Pumping Station	[Symbol]	
Well	[Symbol]	



This map was produced under a contract awarded to the Department of the Interior of the Republic of the Philippines by the Department of Geology.

SCALE 1:10,000

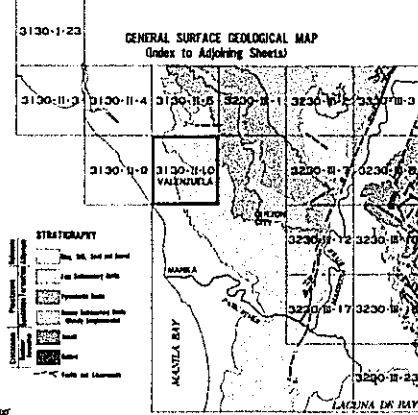
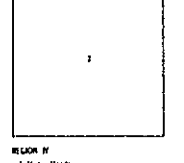


MOUNTAIN	Top Flat and Ridge Flat	General Surface of Lower Plain and Delta
PIEDMONT LANDFORM	Gentle and Moderate Slope (Less Than About 20%)	Former River Bed
	Steep Slope (More Than About 20%)	Natural Levee
HILL AND PLATEAU	Thick Line	Upper Sand Bar
	Thin Line	Lower Sand Bar
TERRACE	Coloured Slope	Backwash
	Small Abroad Fan	CRF
ALLOUVIAL FAN	Top Flat	UNDEFORMED LAND SURFACE
	Gentle Slope (Less Than About 5%)	Landscape Scar
FLOOD PLAIN AND VALLEY PLAIN	Moderate Slope (Between About 5% and 20%)	CRF and Raked Surface
	Steep Slope (More Than About 20%)	Raked Up Surface
ARTIFICIALLY DEFORMED LAND	Level Flat	CRF Slope
	Low Terrace	Raked Up Slope
MARGE AREA	Dent and Shallow Valley	Flow Up Surface
	General Surface of Abroad Fan	Under Construction Area
OTHERS	Former River Bed	Main Watershed
	General Surface of Abroad Fan	Drainage
OTHERS	Former River Bed	Water Surface
	Natural Levee	Landform Boundary
OTHERS	Swamp and Marsh	Subsided Landform Boundary
	Dry River Bed	Bar
OTHERS		Tidal Flat
		Barometric Line

2. GROUND ELEVATION		
2. Ground	0.25	Microdotted Line
Ground Elevation Point	1.2	Dot Line
	0.8	Contour Line

3. ORGANIZATION AND PUBLIC FACILITIES		
ADMINISTRATIVE BOUNDARY	Regional Boundary	Embankment
	City and Municipal Boundary	Dam
TRANSPORTATION	Main Road	Revetment
	Railway	Bridge
MANAGEMENT RELAT. TO WATER AND RELIEF	Sea Terminal	Breakwater, Jetty and Causeway
	Government Building	Flood Gate
FACILITIES FOR RESCUE AND RELIEF	Public Station	Drainage Station
	Fire Station	Wharf and Pier
FACILITIES FOR RESCUE AND RELIEF	Hospital	Lighthouse
	Health Center	Port and Harbor
FACILITIES FOR RESCUE AND RELIEF	Church	Fishery Port
	School	Pipe Line and Cable on Sea Bottom
FACILITIES FOR RESCUE AND RELIEF	Race Course	Fish Pen
	Industrial Storage and Handling (Excludes of Dangerous Materials)	Rock Aweigh or Reef
FACILITIES FOR RESCUE AND RELIEF	Storage Tank	Stranded Wreck
	Tidal Station	Marine Pen and Salt Bed
OBSERVATORY	Water Level Gauge Station	Restricted Area
	Rain Gauge Station	Dumping Area
FACILITIES FOR SUPPLY AND PROCESSING	Power Plant and Sub-Station	
	Water Treatment Plant	
	River Pumping Station	
	Well	

BOUNDARY DIAGRAM



This map was produced under a cooperative arrangement between the Government of the Philippines and the Government of Japan.
 Data Base: Contour and 1:50,000 C-8000-10000
 Aerial Photographs: 1960-1968, 1981 & 1985
 Photo Control by USGS & ICGP
 Photo Control by ICGP, USGS, USMC, USN, USNavy, USN & USN
 Digitized by National Mapping and Research Institute (NMI) (2008)
 Part Address: Baguio, Manila, Metro Manila
 © Copyright 2008

SCALE 1:10,000
 UNIVERSAL TRANSVERSE MERCATOR PROJECTION
 ZONE 51 CLARKE SPHEROID 1866 LUZON DATUM
 VERTICAL DATUM: MSL FOR HEIGHTS MLLW FOR DEPTHS
 CONTOUR INTERVAL 4 METERS

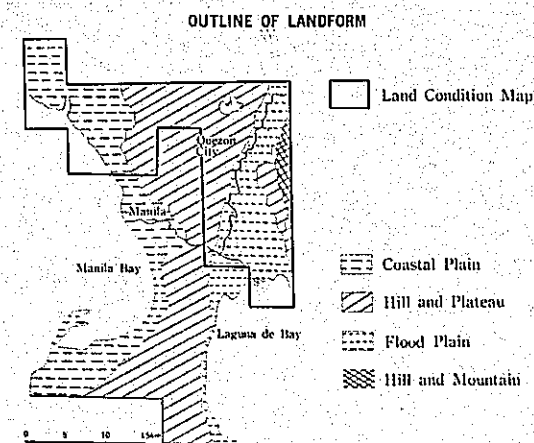
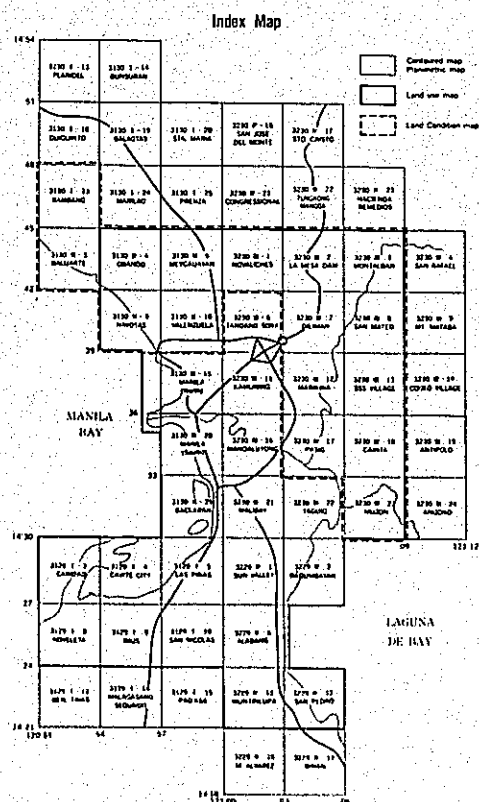
VALENZUELA
 Sheet No. 3130-II-10



METRO MANILA LAND CONDITION MAP
SCALE 1 : 10,000

INFORMATION AND USAGE OF
THE LAND CONDITION MAP

REPUBLIC OF THE PHILIPPINES



2. Utilization of Land Condition Map

This land condition map is prepared using the 1:10,000 contoured map as the base on which the landform classification, ground elevation, organizations and facilities are printed in 12 colors.

It is possible to find out the following areas by reading the land condition map:

- 2-1 Areas affected by flood or high tide such as low or marshy land.
- 2-2 Areas where earthquake damage is expected due to unfavourable conditions of the surface layer.
- 2-3 Areas where ground subsidence is likely to take place such as coastal plain, delta and flood plain areas.
- 2-4 Artificially deformed land and unstable slopes in mountainous or hilly areas where disasters are expected.
- 2-5 Plateaus and gentle hilly areas being comparatively safe from flood or landslide damage, etc.

Therefore, the land condition map can provide basic information not only for disaster prevention but also for land development, and can be utilized more effectively together with the land use map.

3. Outline of Landform

The classes of landforms in the survey area are generally located as follows:

- 3-1 Coastal Plain
Coastal plain with elevation of less than 3m extending north to south along Manila Bay.
- 3-2 Hill and Plateau
The hills and plateaus, where Quezon City, Mandaluyong and Makati are located, extending north to south on the eastern side of the coastal plain. Elevations of the hills and plateaus around Pasig River are 20m-30m and gradually increase northward to 50m-100m.
- 3-3 Flood Plain
Around the Marikina River and Laguna de Bay, the flat lowland with an elevation of 1m-10m covers wide area of floodplain.
- 3-4 Hill and Mountain
The mountain area has an elevation of 200m-300m. The western side of the mountain area which is hilly, has an elevation of 50m-100m. In the mountains where top flats still remain, gentle slopes are generally prevailing although there are steep slopes along the river valleys.

4. Components of the Land Condition Map

The land condition map is composed of the following three major categories:

- Landform Classification,
- Ground Elevation,
- Organization and Facilities

These categories are then divided into 91 sub-classifications.

4-1 Landform Classification

As for the landform classification, various types of landform are classified into mountain, hill and plateau, lowland (flood plain, delta and others), etc. according to the form, formative processes and surface materials. In the detailed classification, the safety or susceptibility to disasters is also taken into account.

4-2 Ground Elevation

In the lowland area the ground elevation points and microrelief lines are shown in order to clarify its susceptibility to flooding and high tides.

4-3 Organization and Facilities

Regarding organization and facilities, emphasis is placed on those closely related to disaster prevention and land development. The facilities for disaster prevention and development, facilities for rescue and relief, observatory, facilities for supply and processing, river and coastal structure, etc. are represented.

5. Land Condition Survey

5-1 Landform Classification

(1) The landform classification was made mainly on the basis of the photo-interpretation of the aerial photographs taken in 1982 and 1986. Field identification was also conducted at the main sites in 1987.

(2) With regard to artificially deformed land (mainly banked up) in lowland (flood plain, delta, coastal plain, etc.) which is susceptible to natural disasters, the landform before deformation is also represented on the basis of the comparative interpretation of aerial photographs taken in 1968, 1982 and 1986.

5-2 Ground Elevation

In the lowland area the ground elevation points are represented by minor order leveling. On the basis of those leveling points, the spot heights and microrelief lines measured by photogrammetry are also represented.

5-3 Organization and Facilities

The organization and facilities are represented on the basis of the features shown on the 1:10,000 contoured maps and the data provided by BCGS and other agencies. Field survey was also conducted by BCGS and JICA.

6. Criteria for Representation on the Land Condition Map

6-1 Landform Classification

(1) The minimum size for the representation of landform classification is generally 2mm x 2mm on the maps and that for the linear symbols is about 5mm on the maps.

(2) The boundaries of the areas where the landform classification not clearly defined are indicated by broken lines.

6-2 Ground Elevation

(1) The minor order leveling points and the spot heights measured by photogrammetry are represented by vertical and slant lettering, respectively. The values of both points are shown in meters, to the first decimal place.

(2) The microrelief lines are represented at 1m intervals.

6-3 Organization and Facilities

(1) The river and coastal structures constructed across rivers of more than 4m in width or those with more than 50m in length are represented.

(2) Regarding transportation, main roads of more than 1km in length are represented.

(3) For facilities in coastal area, the ports, harbors and fishery ports are represented, and their symbol sizes vary according to their scale.

(4) The facilities for rescue and relief, facilities for dangerous materials, observatory, facilities for supply and processing are represented without exception.

(5) The organization and facilities other than the above are represented according to the criteria for the 1:10,000 contoured maps.

6-4 Color Scheme

Printing was conducted with 12 color separation plates (brown, violet, green, yellow, orange, light green, blue, sky blue, silver gray, red, black, dark gray) and their combinations to make the various land conditions easily identifiable.

Mountain:	Brown
Piedmont Landform:	Yellow
Hill and Plateau, Terrace:	Orange-brown
Flood Plain and Valley Plain:	Light green
Coastal Plain and Delta:	Blue-green
Artificially Deformed Land, Unstable	
Slope (Landslide Scar):	Red
Landform in Marine Area:	Silver gray
Water Surface:	Sky blue
Microrelief Line:	Brown
Organization and Facilities:	Black, Red
Ground Elevation, Annotation:	Black
Boundary Line, Unstable Slope (Cliff):	Violet
Base Map:	Dark gray

7. Definition of Selected Technical Terms.

- 1) Knick Line ... Lines passing points on slopes of mountain-sides, which divide upper gentle slopes and lower steep slopes.
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Line
- 15) Bathymetric ... Lines connecting points at equal depth in the sea area.
Line

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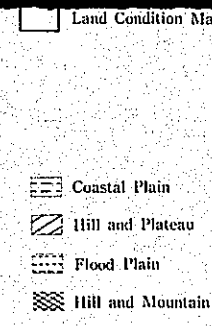
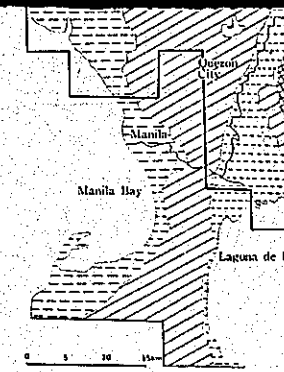
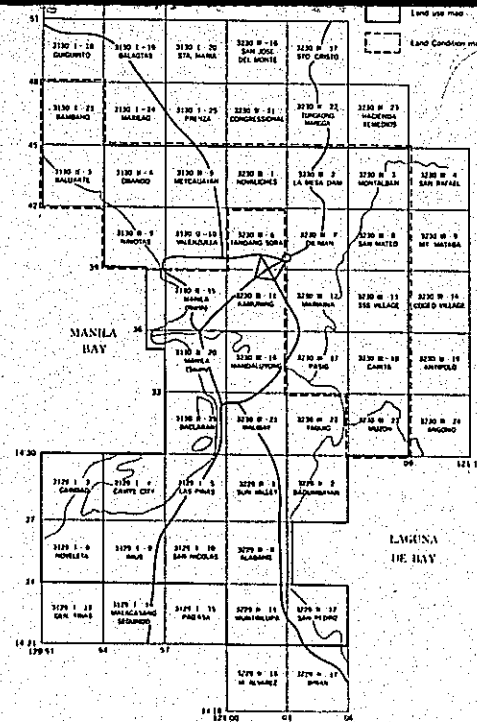
(see Index Map)

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INFORMATION AND USAGE OF THE LAND CONDITION MAP

REPUBLIC OF THE PHILIPPINES

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- (3) The bars, tidal flats and bathymetric lines in marine areas are represented on the basis of the data provided by BCGS.

respectively. The values of both points are shown in meters, to the first decimal place.

(2) The microrelief lines are represented at 1m intervals.

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In response to the request for technical cooperation, the Japanese Government sent preliminary survey teams to Manila in January through March 1985 for discussions with the authorities concerned in the Philippine Government and for field survey and data collection in the Region. The Japanese Government consequently agreed on a 4-year technical cooperation program starting in 1985.

1-1 Outline of these maps is as follows:

Contoured map (Topographic map)	1 : 10,000	1,500km ² (57 sheets)
Planimetric map	1 : 10,000	1,500km ² (57 sheets)
Land use map	1 : 10,000	82km ² (33 sheets)
Land condition map	1 : 10,000	47km ² (16 sheets)

(see Index Map)

1-2 The contoured map was completed in 1987. The aerial photographs taken in 1982 were used for field identification and stereo plotting. As for the major changes after aerial photography, the results of field completion conducted in 1986 and the interpretation of the aerial photographs taken in the same year were integrated.

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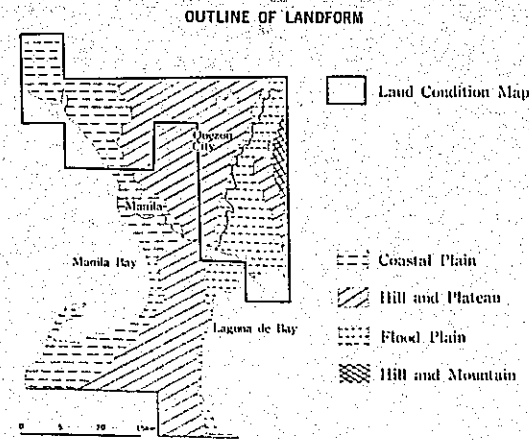
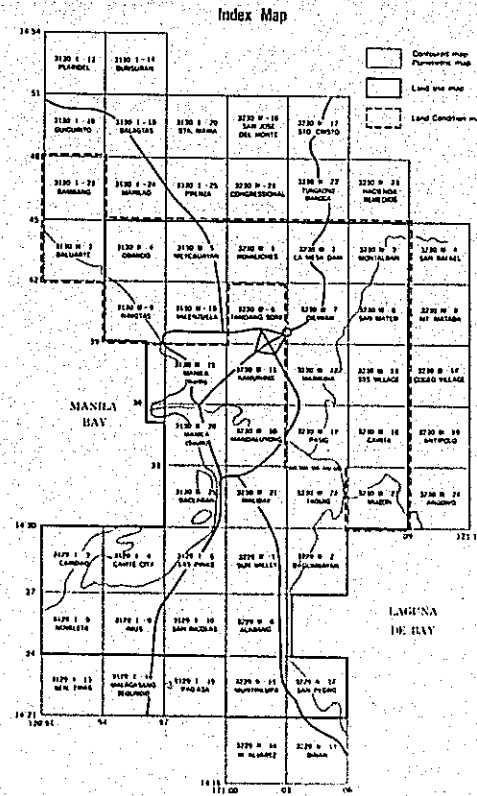
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METRO MANILA LAND CONDITION MAP
SCALE 1 : 10,000

**INFORMATION AND USAGE OF
THE LAND CONDITION MAP**

REPUBLIC OF THE PHILIPPINES



4. Components of the Land Condition Map

The land condition map is composed of the following three major categories:

- Landform Classification,
- Ground Elevation,
- Organization and Facilities

These categories are then divided into 91 sub-classifications.

4-1 Landform Classification

As for the landform classification, various types of landform are classified into mountain, hill and plateau, lowland (flood plain, delta and others), etc. according to the form, formative processes and surface materials. In the detailed classification, the safety or susceptibility to disasters is also taken into account.

4-2 Ground Elevation

In the lowland area the ground elevation points and microrelief lines are shown in order to clarify its susceptibility to flooding and high tides.

4-3 Organization and Facilities

Regarding organization and facilities, emphasis is placed on those closely related to disaster prevention and land development. The facilities for disaster prevention and development, facilities for rescue and relief, observatory, facilities for supply and processing, river and coastal structure, etc. are represented.

5. Land Condition Survey

5-1 Landform Classification

(1) The landform classification was made mainly on the basis of the photo-interpretation of the aerial photographs taken in 1982 and 1986. Field identification was also conducted at the main sites in 1987.

(2) With regard to artificially deformed land (mainly banked up) in lowland (flood plain, delta, coastal plain, etc.) which is susceptible to natural disasters, the landform before deformation is also represented on the basis of the comparative interpretation of aerial photographs taken in 1968, 1982 and 1986.

5-2 Ground Elevation

In the lowland area the ground elevation points are represented by minor order leveling. On the basis of those leveling points, the spot heights and microrelief lines measured by photogrammetry are also represented.

5-3 Organization and Facilities

The organization and facilities are represented on the basis of the features shown on the 1:10,000 contoured maps and the data provided by BCGS and other agencies. Field survey was also conducted by BCGS and JICA.

6. Criteria for Representation on the Land Condition Map

6-1 Landform Classification

(1) The minimum size for the representation of landform classification is generally 2mm x 2mm on the maps and that for the linear symbols is about 5mm on the maps.

(2) The boundaries of the areas where the landform classification not clearly defined are delineated by broken lines.

2. Utilization of Land Condition Map

This land condition map is prepared using the 1:10,000 contoured map as the base on which the landform classification, ground elevation, organizations and facilities are printed in 12 colors.

It is possible to find out the following areas by reading the land condition map:

- 2-1 Areas affected by flood or high tide such as low or marshy land.
- 2-2 Areas where earthquake damage is expected due to unfavourable conditions of the surface layer.
- 2-3 Areas where ground subsidence is likely to take place such as coastal plain, delta and flood plain areas.
- 2-4 Artificially deformed land and unstable slopes in mountainous or hilly areas where disasters are expected.
- 2-5 Plateaus and gentle hilly areas being comparatively safe from flood or landslide damage, etc.

Therefore, the land condition map can provide basic information not only for disaster prevention but also for land development, and can be utilized more effectively together with the land use map.

3. Outline of Landform

The classes of landforms in the survey area are generally located as follows:

- 3-1 Coastal Plain
Coastal plain with elevation of less than 3m extending north to south along Manila Bay.
- 3-2 Hill and Plateau
The hills and plateaus, where Quezon City, Mandaluyong and Makati are located, extending north to south on the eastern side of the coastal plain. Elevations of the hills and plateaus around Pasig River are 20m~30m and gradually increase northward to 80m~100m.
- 3-3 Flood Plain
Around the Marikina River and Laguna de Bay, the flat lowland with an elevation of 1m~10m covers wide area of floodplain.
- 3-4 Hill and Mountain
The mountain area has an elevation of 200m~300m. The western side of the mountain area which is hilly, has an elevation of 50m~100m. In the mountains where top flats still remain, gentle slopes are generally prevailing although there are steep slopes along the river valleys.

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6-2 Ground Elevation

- (1) The minor order leveling points and the spot heights measured by photogrammetry are represented by vertical and slant lettering, respectively. The values of both points are shown in meters, to the first decimal place.
- (2) The microrelief lines are represented at 1m intervals.

6-3 Organization and Facilities

- (1) The river and coastal structures constructed across rivers of more than 4m in width or those with more than 50m in length are represented.
- (2) Regarding transportation, main roads of more than 1km in length are represented.
- (3) For facilities in coastal area, the ports, harbors and fishery ports are represented, and their symbol sizes vary according to their scale.
- (4) The facilities for rescue and relief, facilities for dangerous materials, observatory, facilities for supply and processing are represented without exception.
- (5) The organization and facilities other than the above are represented according to the criteria for the 1:10,000 contoured maps.

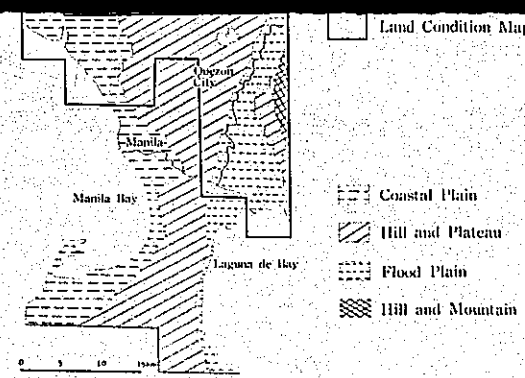
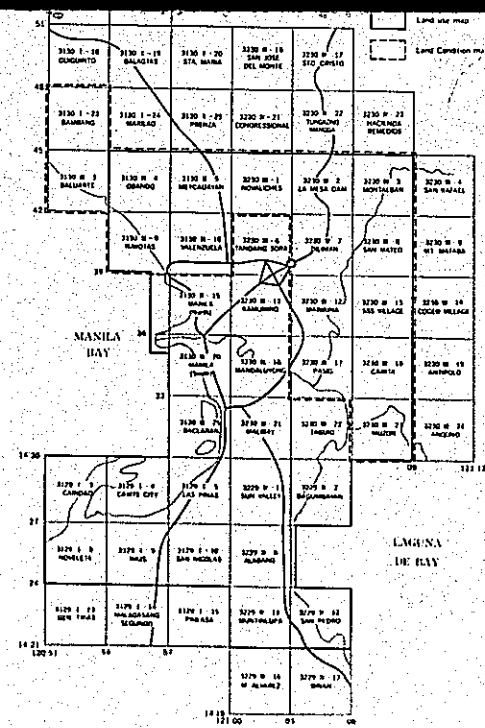
6-4 Color Scheme

Printing was conducted with 12 color separation plates (brown, violet, green, yellow, orange, light green, blue, sky blue, silver gray, red, black, dark gray) and their combinations to make the various land conditions easily identifiable.

Mountain:	Brown
Piedmont Landform:	Yellow
Hill and Plateau, Terrace:	Orange-brown
Flood Plain and Valley Plain:	Light green
Coastal Plain and Delta:	Blue-green
Artificially Deformed Land, Unstable	
Slope (Landslide Scar):	Red
Landform in Marine Area:	Silver gray
Water Surface:	Sky blue
Microrelief Line:	Brown
Organization and Facilities:	Black, Red
Ground Elevation, Annotation:	Black
Boundary Line, Unstable Slope (Cliff):	Violet
Base Map:	Dark gray

7. Definition of Selected Technical Terms

- 1) Knick Line ... Lines passing points on slopes of mountain-sides, which divide upper gentle slopes and lower steep slopes.
- 2) Talus ... Relatively steep depositional surfaces formed at lower parts of mountain-slopes by rain wash or land slide and consisting of larger grains of debris.
- 3) Colluvial Slope ... Depositional landforms with relatively gentle slopes, formed by debris and weathered material transported and sedimented by effects of rain wash and soil creep.
- 4) Small Alluvial Fan ... Small depositional landforms with relatively gentle slopes, starting at the end of valleys and fanning into lowland where the river transportation force diminishes.
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- (3) The bars, tidal flats and bathymetric lines in marine areas are represented on the basis of the data provided by BCGS.

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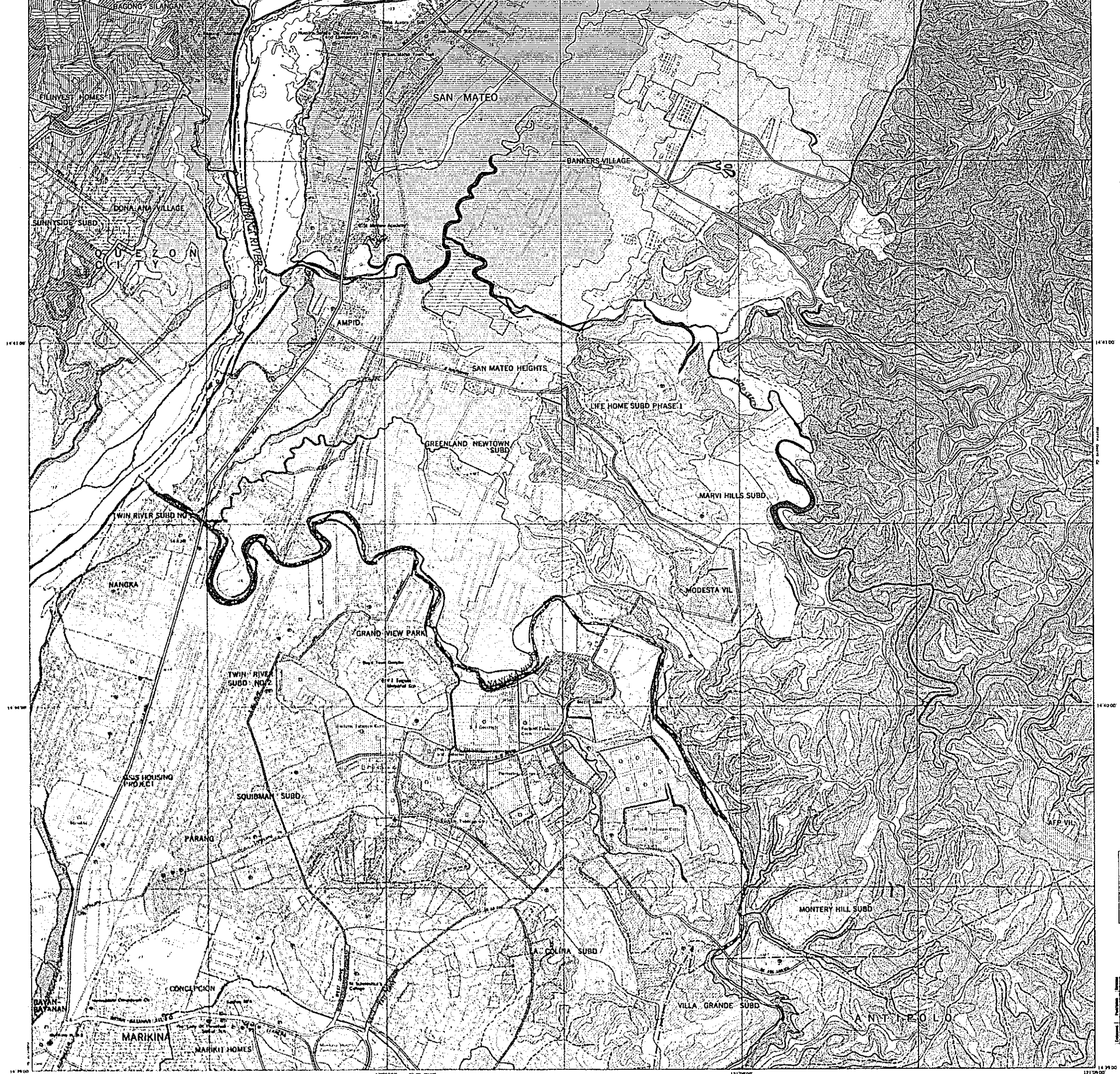
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MOUNTAIN	Top Flat and Ridge Flat	Normal Section of Coastal Plain and Delta	Normal Section of Coastal Plain and Delta
	Steep Slope (Less Than About 20%)	Former River Bed	Former River Bed
	Steep Slope (More Than About 20%)	Natural Levee	Natural Levee
	Knick Line	Upper Sand Bar	Upper Sand Bar
PRELUDE LANDFORM	Talus	Lower Sand Bar	Lower Sand Bar
	Colluvial Slope	Backmarsh	Backmarsh
	Small Alluvial Fan	COASTAL PLAIN AND DELTA	COASTAL PLAIN AND DELTA
HILL AND PLATEAU	Top Flat	UNSTABLE SLOPE	UNSTABLE SLOPE
	Growth Slope (Less Than About 5%)	Landslide Scar	Landslide Scar
	Reduction Slope (Between About 5% and 20%)	Cut and Rolled Surface	Cut and Rolled Surface
	Steep Slope (More Than About 20%)	Banked Up Surface	Banked Up Surface
	Valley Flat	Cut Slope	Cut Slope
TERRACE	Low Terrace	Banked Up Slope	Banked Up Slope
	Lower Terrace	Filled Up Surface	Filled Up Surface
	Dent and Shadow Valley	Under Construction Area	Under Construction Area
ALLUVIAL FAN	General Surface of Alluvial Fan	Main Watershed	Main Watershed
	Former River Bed	Drainage	Drainage
	Water Surface	Water Surface	Water Surface
FLOOD PLAIN AND VALLEY PLAIN	Normal Section of Flood Plain and Valley Plain	Landform Boundary	Landform Boundary
	Former River Bed	Industrial Landform Boundary	Industrial Landform Boundary
	Natural Levee	Bar	Bar
	Backmarsh	Tidal Flat	Tidal Flat
	Sump and Marsh	Geosynthetic Line	Geosynthetic Line
	Dry River Bed		

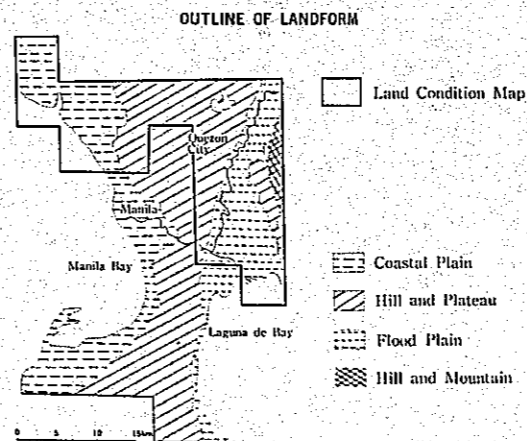
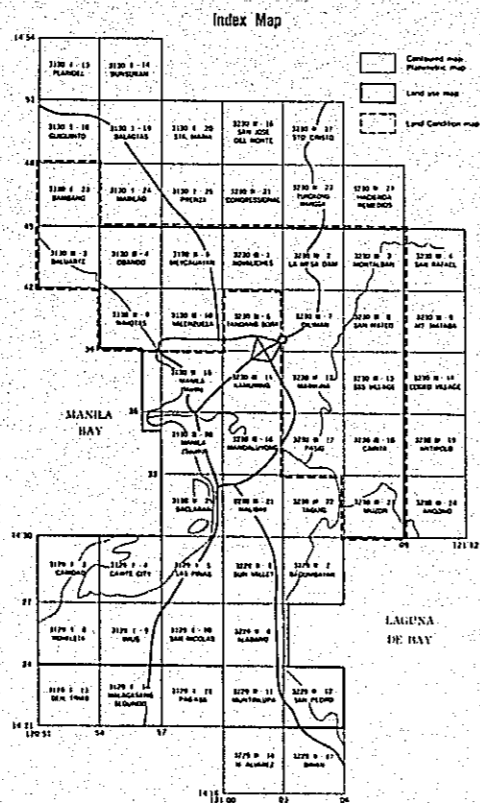
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METRO MANILA LAND CONDITION MAP

SCALE 1 : 10,000

INFORMATION AND USAGE OF THE LAND CONDITION MAP

REPUBLIC OF THE PHILIPPINES



4. Components of the Land Condition Map

The land condition map is composed of the following three major categories:

- Landform Classification,
- Ground Elevation,
- Organization and Facilities

These categories are then divided into 91 sub-classifications.

4-1 Landform Classification

As for the landform classification, various types of landform are classified into mountain, hill and plateau, lowland (flood plain, delta and others), etc. according to the form, formative processes and surface materials. In the detailed classification, the safety or susceptibility to disasters is also taken into account.

4-2 Ground Elevation

In the lowland area the ground elevation points and microrelief lines are shown in order to clarify its susceptibility to flooding and high tides.

4-3 Organization and Facilities

Regarding organization and facilities, emphasis is placed on those closely related to disaster prevention and land development. The facilities for disaster prevention and development, facilities for rescue and relief, observatory, facilities for supply and processing, river and coastal structure, etc. are represented.

5. Land Condition Survey

5-1 Landform Classification

(1) The landform classification was made mainly on the basis of the photo-interpretation of the aerial photographs taken in 1982 and 1986. Field identification was also conducted at the main sites in 1987.

(2) With regard to artificially deformed land (mainly banked up) in lowland (flood plain, delta, coastal plain, etc.) which is susceptible to natural disasters, the landform before deformation is also represented on the basis of the comparative interpretation of aerial photographs taken in 1968, 1982 and 1986.

5-2 Ground Elevation

In the lowland area the ground elevation points are represented by minor order leveling. On the basis of these leveling points, the spot heights and microrelief lines measured by photogrammetry are also represented.

5-3 Organization and Facilities

The organization and facilities are represented on the basis of the features shown on the 1:10,000 contoured maps and the data provided by BCGS and other agencies. Field survey was also conducted by BCGS and JICA.

6. Criteria for Representation on the Land Condition Map

6-1 Landform Classification

(1) The minimum size for the representation of landform classification is generally 2mm x 2mm on the maps and that for the linear symbols is about 5mm on the maps.

(2) The boundaries of the areas where the landform classification not

2. Utilization of Land Condition Map

This land condition map is prepared using the 1:10,000 contoured map as the base on which the landform classification, ground elevation, organizations and facilities are printed in 12 colors.

It is possible to find out the following areas by reading the land condition map:

- 2-1 Areas affected by flood or high tide such as low or marshy land.
- 2-2 Areas where earthquake damage is expected due to unfavourable conditions of the surface layer.
- 2-3 Areas where ground subsidence is likely to take place such as coastal plain, delta and flood plain areas.
- 2-4 Artificially deformed land and unstable slopes in mountainous or hilly areas where disasters are expected.
- 2-5 Plateaus and gentle hilly areas being comparatively safe from flood or landslide damage, etc.

Therefore, the land condition map can provide basic information not only for disaster prevention but also for land development, and can be utilized more effectively together with the land use map.

3. Outline of Landform

The classes of landforms in the survey area are generally located as follows:

- 3-1 Coastal Plain
Coastal plain with elevation of less than 3m extending north to south along Manila Bay.
- 3-2 Hill and Plateau
The hills and plateaus, where Quezon City, Mandaluyong and Makati are located, extending north to south on the eastern side of the coastal plain. Elevations of the hills and plateaus around Pasig River are 20m ~ 30m and gradually increase northward to 80m ~ 100m.
- 3-3 Flood Plain
Around the Marikina River and Laguna de Bay, the flat lowland with an elevation of 1m ~ 10m covers wide area of floodplain.
- 3-4 Hill and Mountain
The mountain area has an elevation of 200m ~ 300m. The western side of the mountain area which is hilly, has an elevation of 50m ~ 100m. In the mountains where top flats still remain, gentle slopes are generally prevailing although there are steep slopes along the river valleys.

6-2 Ground Elevation

(1) The minor order leveling points and the spot heights measured by photogrammetry are represented by vertical and slant lettering, respectively. The values of both points are shown in meters, to the first decimal place.

(2) The microrelief lines are represented at 1m intervals.

6-3 Organization and Facilities

- (1) The river and coastal structures constructed across rivers of more than 4m in width or those with more than 50m in length are represented.
- (2) Regarding transportation, main roads of more than 1km in length are represented.
- (3) For facilities in coastal area, the ports, harbors and fishery ports are represented, and their symbol sizes vary according to their scale.
- (4) The facilities for rescue and relief, facilities for dangerous materials, observatory, facilities for supply and processing are represented without exception.
- (5) The organization and facilities other than the above are represented according to the criteria for the 1:10,000 contoured maps.

6-4 Color Scheme

Printing was conducted with 12 color separation plates (brown, violet, green, yellow, orange, light green, blue, sky blue, silver gray, red, black, dark gray) and their combinations to make the various land conditions easily identifiable.

Mountain:	Brown
Piedmont Landform:	Yellow
Hill and Plateau, Terrace:	Orange-brown
Flood Plain and Valley Plain:	Light green
Coastal Plain and Delta:	Blue-green
Artificially Deformed Land, Unstable Slope (Landslide Scar):	Red
Landform in Marine Area:	Silver gray
Water Surface:	Sky blue
Microrelief Line:	Brown
Organization and Facilities:	Black, Red
Ground Elevation, Annotation:	Black
Boundary Line, Unstable Slope (Cliff):	Violet
Base Map:	Dark gray

7. Definition of Selected Technical Terms.

- 1) Knick Line ... Lines passing points on slopes of mountain-sides, which divide upper gentle slopes and lower steep slopes.
- 2) Talus ... Relatively steep depositional surfaces formed at lower parts of mountain-slopes by rain wash or land slide and consisting of larger grains of debris.
- 3) Colluvial Slope ... Depositional landforms with relatively gentle slopes, formed by debris and weathered material transported and sedimented by effects of rain wash and soil creep.
- 4) Small Alluvial Fan ... Small depositional landforms with relatively gentle slopes, starting at the end of valleys and fanning into lowland where the river transportation force diminishes.
- 5) Valley Flat ... Flat surfaces located along river tributaries, where bed rock is partially covered by shallow fluvial deposits.
- 6) Dent and Shallow Valley ... Shallow depressions on the surface of terraces.
- 7) Natural Levee ... Strip microrelief located along or around rivers which is composed of sand and silt deposits made during floods.
- 8) Backmarsh ... Lowland relatively free from alluviation of rivers and poorly drained because of location behind natural levees and others.
- 9) Upper Sand Bar ... Microrelief located along the former and present coast, composed of sand and gravel, and formed by sedimentation and action of ocean waves and coastal currents.
- 10) Landslide Scar ... Vestiges of radical sliding of large masses of earth down slopes or cliffs.
- 11) Filled Up Surface ... Artificial land formed by filling marshes, lakes or river beds to the level of the surrounding surfaces.
- 12) Main Watershed ... Main ridges of mountains and hills including those of several drainage basins which collect to a common basin.
- 13) Tidal Flat ... Shallow water areas with mud beds which are exposed at low tide.
- 14) Microrelief Line ... Lines depicting detailed landform elevation in lowland.
- 15) Bathymetric ... Lines connecting points at equal depth in the sea area.

1. Background

To cope with many urban problems prevailing in the National Capital Region, the Philippine Government requested the Japanese Government in March 1981 for technical cooperation in the preparation of urban base maps, which represent the existing conditions of the Region in detail, as basic materials for the implementation of various public works as well as the establishment of diverse plans concerning disaster prevention, land use, urban redevelopment, etc.

In response to the request for technical cooperation, the Japanese Government sent preliminary survey teams to Manila in January through March 1985 for discussions with the authorities concerned in the Philippine Government and for field survey and data collection in the Region. The Japanese Government consequently agreed on a 4-year technical cooperation program starting in 1985.

1-1 Outline of those maps is as follows:

Contoured map (Topographic map)	1 : 10,000	1,500km ² (57 sheets)
Planimetric map	1 : 10,000	1,500km ² (57 sheets)
Land use map	1 : 10,000	82.3km ² (33 sheets)
Land condition map	1 : 10,000	170km ² (16 sheets)

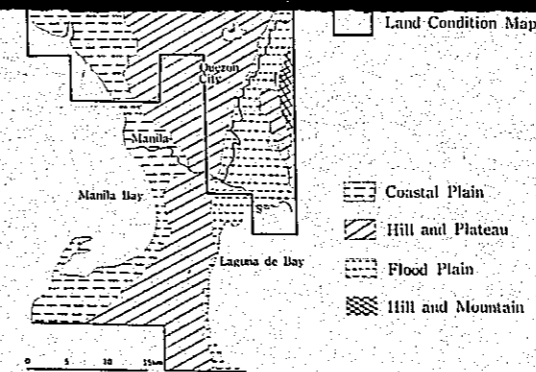
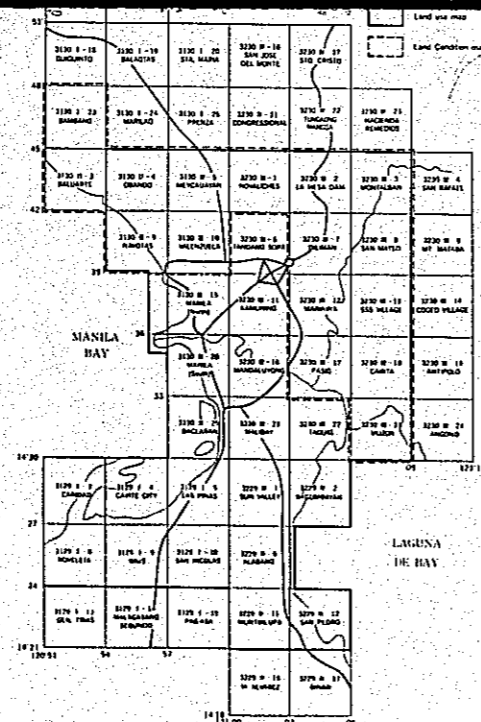
(see Index Map)

1-2 The contoured map was completed in 1987. The aerial photographs taken in 1982 were used for field identification and stereo plotting. As for the major changes after aerial photography, the results of field completion conducted in 1986 and the interpretation of the aerial photographs taken in the same year were integrated.

1-3 The planimetric map was completed in 1987 by the combination of color separation plates of the contoured map.

1-4 The land use map was completed in 1989 using the contoured map as the base and integrating mainly the interpretation of the aerial photographs taken in 1982 and the results of field identification conducted in 1985.

1-5 The land condition map was completed in 1989 to represent landform classification, ground elevation, organization and facilities using the contoured map as the base. The representation was made mainly on the basis of the interpretation of the aerial photographs taken in 1982



INFORMATION AND USAGE OF THE LAND CONDITION MAP

REPUBLIC OF THE PHILIPPINES

2. Utilization of Land Condition Map

This land condition map is prepared using the 1:10,000 contoured map as the base on which the landform classification, ground elevation, organizations and facilities are printed in 12 colors.

It is possible to find out the following areas by reading the land condition map:

- 2-1 Areas affected by flood or high tide such as low or marshy land.
- 2-2 Areas where earthquake damage is expected due to unfavourable conditions of the surface layer.
- 2-3 Areas where ground subsidence is likely to take place such as coastal plain, delta and flood plain areas.
- 2-4 Artificially deformed land and unstable slopes in mountainous or hilly areas where disasters are expected.
- 2-5 Plateaus and gentle hilly areas being comparatively safe from flood or landslide damage, etc.

Therefore, the land condition map can provide basic information not only for disaster prevention but also for land development, and can be utilized more effectively together with the land use map.

3. Outline of Landform

The classes of landforms in the survey area are generally located as follows:

- 3-1 Coastal Plain
Coastal plain with elevation of less than 3m extending north to south along Manila Bay.
- 3-2 Hill and Plateau
The hills and plateaus, where Quezon City, Mandaluyong and Makati are located, extending north to south on the eastern side of the coastal plain. Elevations of the hills and plateaus around Pasig River are 20m-30m and gradually increase northward to 80m-100m.
- 3-3 Flood Plain
Around the Marikina River and Laguna de Bay, the flat lowland with an elevation of 1m-10m covers wide area of floodplain.
- 3-4 Hill and Mountain
The mountain area has an elevation of 200m-300m. The western side of the mountain area which is hilly, has an elevation of 50m-100m. In the mountains where top flats still remain, gentle slopes are generally prevailing although there are steep slopes along the river valleys.

4. Components of the Land Condition Map

The land condition map is composed of the following three major categories:

- Landform Classification,
- Ground Elevation,
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These categories are then divided into 91 sub-classifications.

4-1 Landform Classification

As for the landform classification, various types of landform are classified into mountain, hill and plateau, lowland (flood plain, delta and others), etc. according to the form, formative processes and surface materials. In the detailed classification, the safety or susceptibility to disasters is also taken into account.

4-2 Ground Elevation

In the lowland area the ground elevation points and microrelief lines are shown in order to clarify its susceptibility to flooding and high tides.

4-3 Organization and Facilities

Regarding organization and facilities, emphasis is placed on those closely related to disaster prevention and land development. The facilities for disaster prevention and development, facilities for rescue and relief, observatory, facilities for supply and processing, river and coastal structure, etc. are represented.

5. Land Condition Survey

5-1 Landform Classification

(1) The landform classification was made mainly on the basis of the photo-interpretation of the aerial photographs taken in 1982 and 1986. Field identification was also conducted at the main sites in 1987.

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The organization and facilities are represented on the basis of the features shown on the 1:10,000 contoured maps and the data provided by BCGS and other agencies. Field survey was also conducted by BCGS and JICA.

6. Criteria for Representation on the Land Condition Map

6-1 Landform Classification

- (1) The minimum size for the representation of landform classification is generally 2mm x 2mm on the maps and that for the linear symbols is about 5mm on the maps.
- (2) The boundaries of the areas where the landform classification not clearly defined are delineated by broken lines.
- (3) The bars, tidal flats and bathymetric lines in marine areas are represented on the basis of the data provided by BCGS.

respectively. The values of both points are shown in meters, to the first decimal place.

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- (1) The river and coastal structures constructed across rivers of more than 4m in width or those with more than 50m in length are represented.
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1-2 The contoured map was completed in 1987. The aerial photographs taken in 1982 were used for field identification and stereo plotting. As for the major changes after aerial photography, the results of field completion conducted in 1986 and the interpretation of the aerial photographs taken in the same year were integrated.

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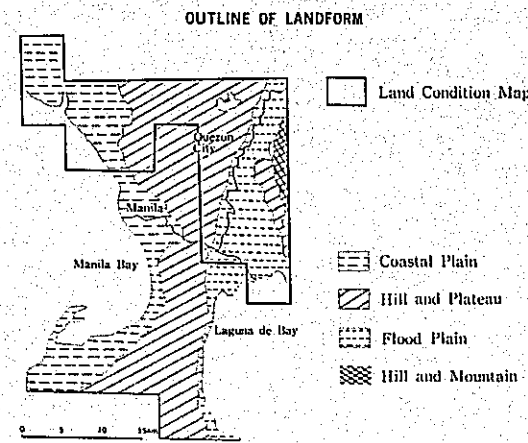
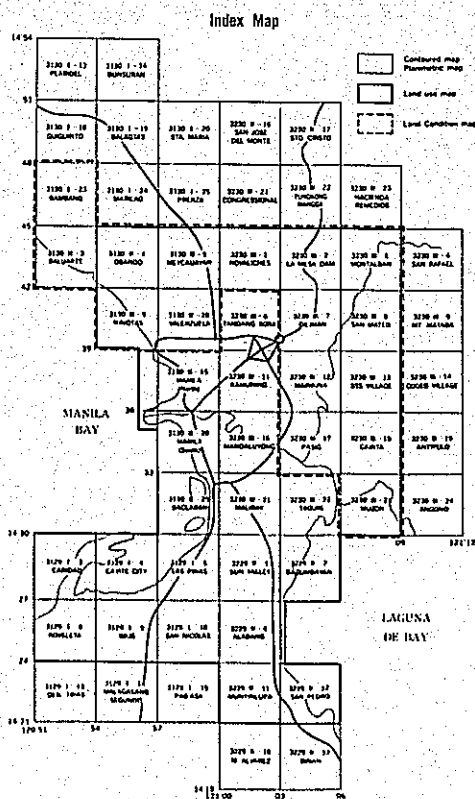
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METRO MANILA LAND CONDITION MAP
SCALE 1 : 10,000

INFORMATION AND USAGE OF
THE LAND CONDITION MAP

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- (2) With regard to artificially deformed land (mainly banked up) in lowland (flood plain, delta, coastal plain, etc.) which is susceptible to natural disasters, the landform before deformation is also represented on the basis of the comparative interpretation of aerial photographs taken in 1968, 1982 and 1986.

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In the lowland area the ground elevation points are represented by minor order leveling. On the basis of those leveling points, the spot heights and microrelief lines measured by photogrammetry are also represented.

5-3 Organization and Facilities

The organization and facilities are represented on the basis of the features shown on the 1:10,000 contoured maps and the data provided by BCGS and other agencies. Field survey was also conducted by BCGS and JICA.

6. Criteria for Representation on the Land Condition Map

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- (1) The minimum size for the representation of landform classification is generally 2mm x 2mm on the maps and that for the linear symbols is about 5mm on the maps.
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- (1) The minor order leveling points and the spot heights measured by photogrammetry are represented by vertical and slant lettering, respectively. The values of both points are shown in meters, to the first decimal place.
- (2) The microrelief lines are represented at 1m intervals.

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- (1) The river and coastal structures constructed across rivers of more than 4m in width or those with more than 50m in length are represented.
- (2) Regarding transportation, main roads of more than 1km in length are represented.
- (3) For facilities in coastal area, the ports, harbors and fishery ports are represented, and their symbol sizes vary according to their scale.
- (4) The facilities for rescue and relief, facilities for dangerous materials, observatory, facilities for supply and processing are represented without exception.
- (5) The organization and facilities other than the above, are represented according to the criteria for the 1:10,000 contoured maps.

6-4 Color Scheme

Printing was conducted with 12 color separation plates (brown, violet, green, yellow, orange, light green, blue, sky blue, silver gray, red, black, dark gray) and their combinations to make the various land conditions easily identifiable.

Mountain:	Brown
Piedmont Landform:	Yellow
Hill and Plateau, Terrace:	Orange-brown
Flood Plain and Valley Plain:	Light green
Coastal Plain and Delta:	Blue-green
Artificially Deformed Land, Unstable	
Slope (Landslide Scar):	Red
Landform in Marine Area:	Silver gray
Water Surface:	Sky blue
Microrelief Line:	Brown
Organization and Facilities:	Black, Red
Ground Elevation, Annotation:	Black
Boundary Line, Unstable Slope (Cliff):	Violet
Base Map:	Dark gray

7. Definition of Selected Technical Terms

- 1) Knick Line ... Lines passing points on slopes of mountain-sides, which divide upper gentle slopes and lower steep slopes.
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1. Background

To cope with many urban problems prevailing in the National Capital Region, the Philippine Government requested the Japanese Government in March, 1981 for technical cooperation in the preparation of urban base maps, which represent the existing conditions of the Region in detail, as basic materials for the implementation of various public works as well as the establishment of diverse plans concerning disaster prevention, land use, urban redevelopment, etc.

In response to the request for technical cooperation, the Japanese Government sent preliminary survey teams to Manila in January through March 1985 for discussions with the authorities concerned in the Philippine Government and for field survey and data collection in the Region. The Japanese Government consequently agreed on a 4-year technical cooperation program starting in 1985.

1-1 Outline of those maps is as follows:

Contoured map (Topographic map)	1 : 10,000	1,500m ² (57 sheets)
Planimetric map	1 : 10,000	1,500m ² (57 sheets)
Land use map	1 : 10,000	823m ² (33 sheets)
Land condition map	1 : 10,000	476m ² (16 sheets)

(see Index Map)

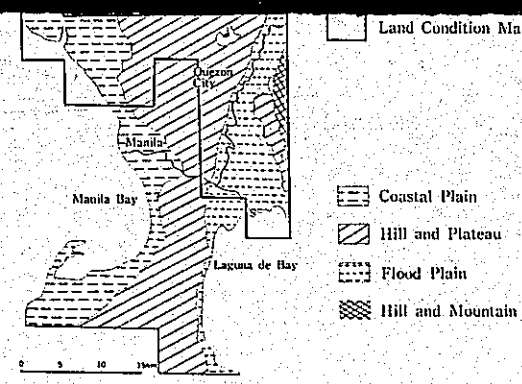
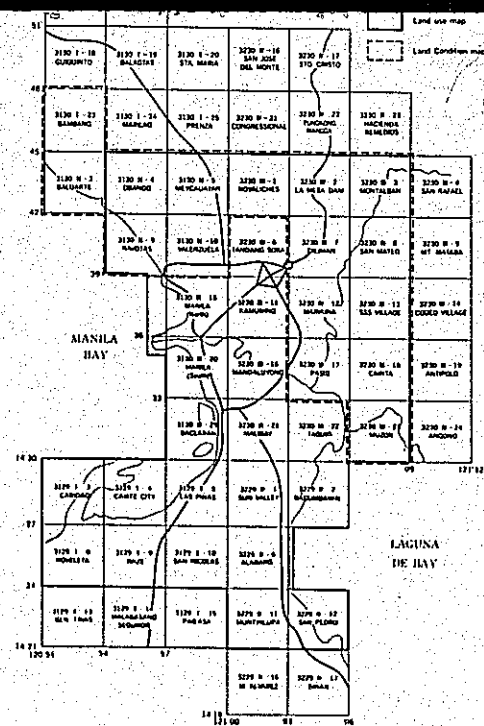
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INFORMATION AND USAGE OF THE LAND CONDITION MAP



REPUBLIC OF THE PHILIPPINES

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2. Utilization of Land Condition Map

This land condition map is prepared using the 1:10,000 contoured map as the base on which the landform classification, ground elevation, organizations and facilities are printed in 12 colors.

It is possible to find out the following areas by reading the land condition map:

- 2-1 Areas affected by flood or high tide such as low or marshy land.
- 2-2 Areas where earthquake damage is expected due to unfavorable conditions of the surface layer.
- 2-3 Areas where ground subsidence is likely to take place such as coastal plain, delta and flood plain areas.
- 2-4 Artificially deformed land and unstable slopes in mountainous or hilly areas where disasters are expected.
- 2-5 Plateaus and gentle hilly areas being comparatively safe from flood or landslide damage, etc.

Therefore, the land condition map can provide basic information not only for disaster prevention but also for land development, and can be utilized more effectively together with the land use map.

3. Outline of Landform

The classes of landforms in the survey area are generally located as follows:

- 3-1 Coastal Plain
Coastal plain with elevation of less than 3m extending north to south along Manila Bay.
- 3-2 Hill and Plateau
The hills and plateaus, where Quezon City, Mandaluyong and Makati are located, extending north to south on the eastern side of the coastal plain. Elevations of the hills and plateaus around Pasig River are 20m-30m and gradually increase northward to 80m-100m.
- 3-3 Flood Plain
Around the Marikina River and Laguna de Bay, the flat lowland with an elevation of 1m-10m covers wide area of floodplain.
- 3-4 Hill and Mountain
The mountain area has an elevation of 200m-300m. The western side of the mountain area which is hilly, has an elevation of 50m-100m. In the mountains where top flats still remain, gentle slopes are generally prevailing although there are steep slopes along the river valleys.

4. Components of the Land Condition Map

The land condition map is composed of the following three major categories:

- Landform Classification,
- Ground Elevation,
- Organization and Facilities

These categories are then divided into 91 sub-classifications.

4-1 Landform Classification

As for the landform classification, various types of landform are classified into mountain, hill and plateau, lowland (flood plain, delta and others), etc. according to the form, formative processes and surface materials. In the detailed classification, the safety or susceptibility to disasters is also taken into account.

4-2 Ground Elevation

In the lowland area the ground elevation points and microrelief lines are shown in order to clarify its susceptibility to flooding and high tides.

4-3 Organization and Facilities

Regarding organization and facilities, emphasis is placed on those closely related to disaster prevention and land development. The facilities for disaster prevention and development, facilities for rescue and relief, observatory, facilities for supply and processing, river and coastal structure, etc. are represented.

5. Land Condition Survey

5-1 Landform Classification

(1) The landform classification was made mainly on the basis of the photo-interpretation of the aerial photographs taken in 1982 and 1986. Field identification was also conducted at the main sites in 1987.

(2) With regard to artificially deformed land (mainly banked up) in lowland (flood plain, delta, coastal plain, etc.) which is susceptible to natural disasters, the landform before deformation is also represented on the basis of the comparative interpretation of aerial photographs taken in 1968, 1982 and 1986.

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In the lowland area the ground elevation points are represented by minor order leveling. On the basis of those leveling points, the spot heights and microrelief lines measured by photogrammetry are also represented.

5-3 Organization and Facilities

The organization and facilities are represented on the basis of the features shown on the 1:10,000 contoured maps and the data provided by BCGS and other agencies. Field survey was also conducted by BCGS and JICA.

6. Criteria for Representation on the Land Condition Map

6-1 Landform Classification

- (1) The minimum size for the representation of landform classification is generally 2mm x 2mm on the maps and that for the linear symbols is about 5mm on the maps.
- (2) The boundaries of the areas where the landform classification not clearly defined are delineated by broken lines.
- (3) The bars, tidal flats and bathymetric lines in marine areas are represented on the basis of the data provided by BCGS.

respectively. The values of both points are shown in meters, to the first decimal place.

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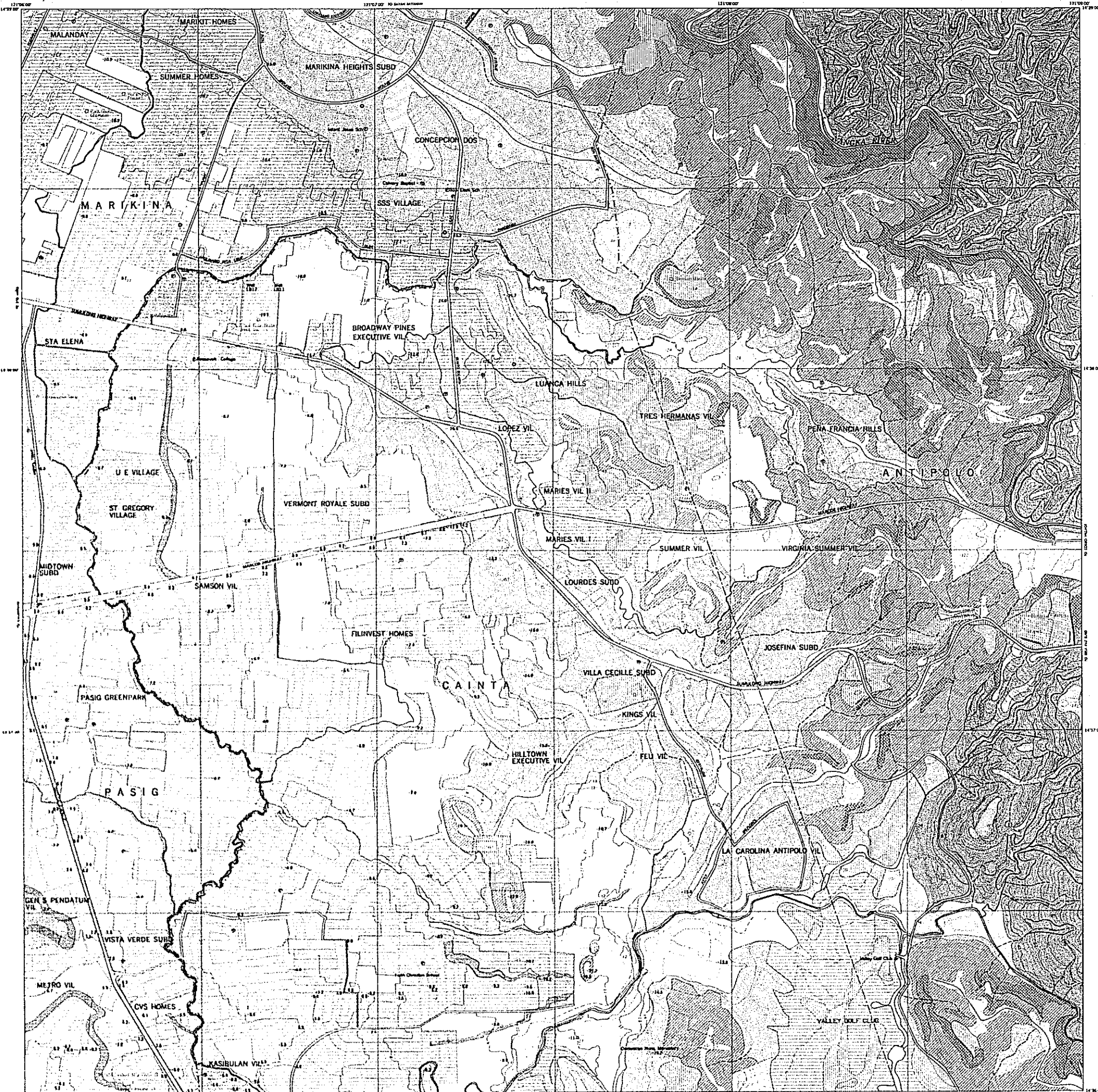
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Mountain:	Brown
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Hill and Plateau, Terrace:	Orange-brown
Flood Plain and Valley Plain:	Light green
Coastal Plain and Delta:	Blue-green
Artificially Deformed Land, Unstable Slope (Landslide Scar):	Red
Landform in Marine Area:	Silver gray
Water Surface:	Sky blue
Microrelief Line:	Brown
Organization and Facilities:	Black, Red
Ground Elevation, Annotation:	Black
Boundary Line, Unstable Slope (Cliff):	Violet
Base Map:	Dark gray

7. Definition of Selected Technical Terms

- 1) Knick Line ... Lines passing points on slopes of mountain-sides, which divide upper gentle slopes and lower steep slopes.
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LEGEND

I. LANDFORM CLASSIFICATION

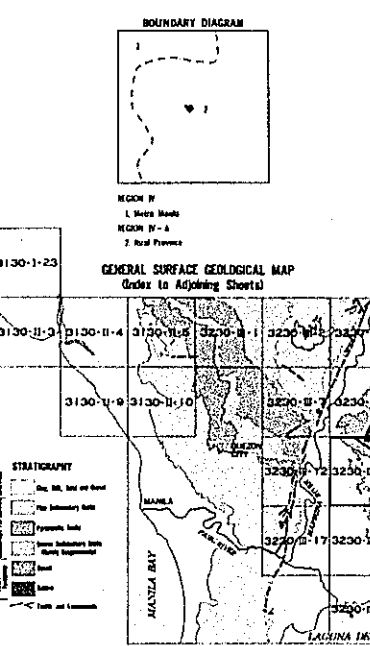
MOUNTAIN	Top Flat and Ridge Flat	Steepest Slope of Coastline
PREDOMINANT LANDFORM	Steep Slope (Less Than About 20°)	Steeper Slope (More Than About 20°)
HILL AND PLATEAU	Top Flat	Steep Slope (Less Than About 5°)
TERRACE	Low Terrace	High Terrace
ALLUVIAL FAN	General Surface of Alluvial Fan	Former River Bed
FLOOD PLAIN AND VALLEY FLOOR	General Surface of Flood Plain	Former River Bed
COASTAL PLAIN AND DELTA	Former River Bed	Natural Levee
UNSTABLE SLOPE	Cut	Landslide Scar
ARTIFICIALLY DEFORMED LAND	Cut and Filled Surface	Banked Up Surface
OTHERS	Water Surface	Landform Boundary

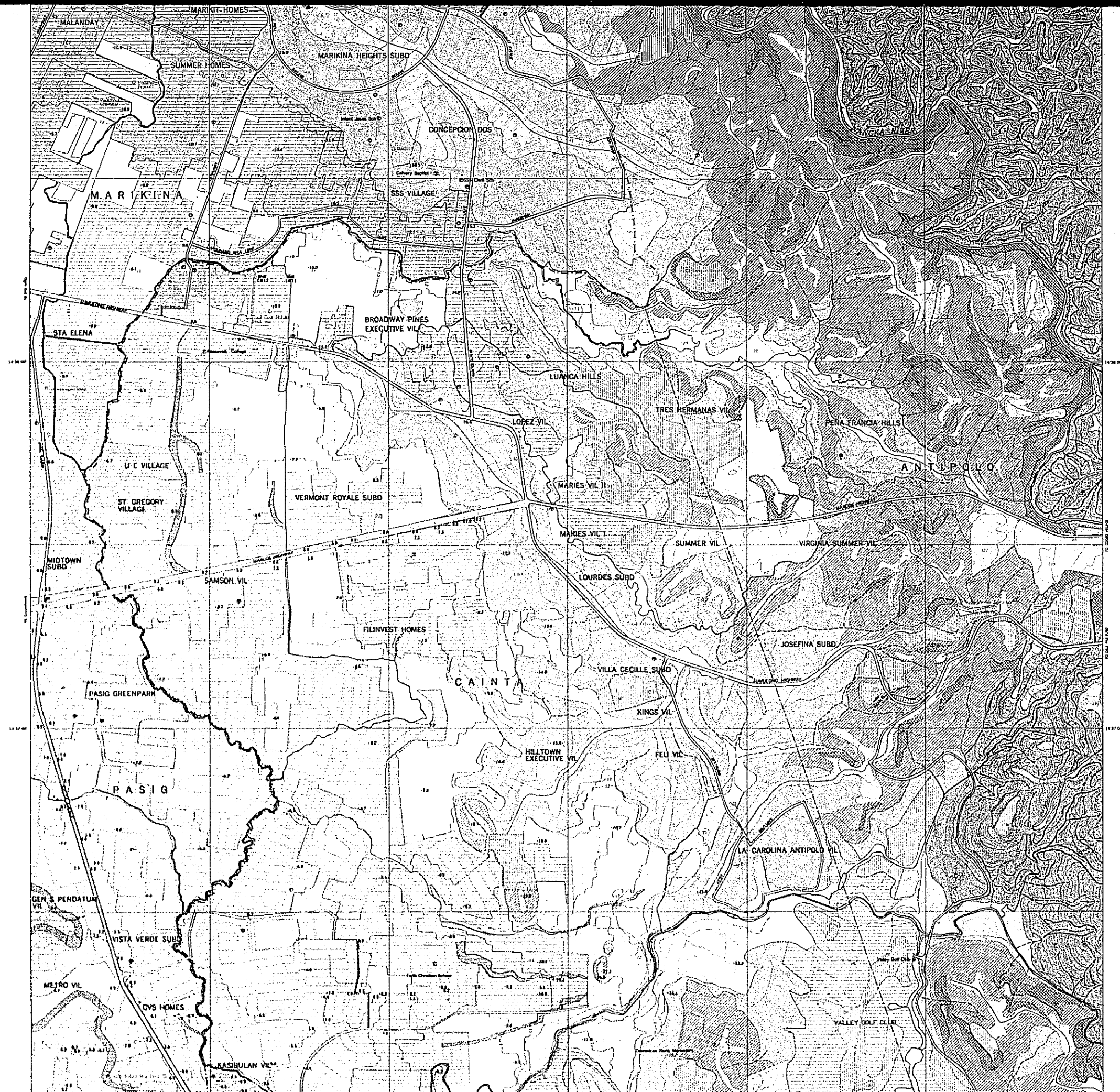
2. GROUND ELEVATION

Beach Mark	0.0 to 0.2	Microrelief Line
Ground Elevation Point	0.0 to 2.0	Contour Line

3. ORGANIZATION AND PUBLIC FACILITIES

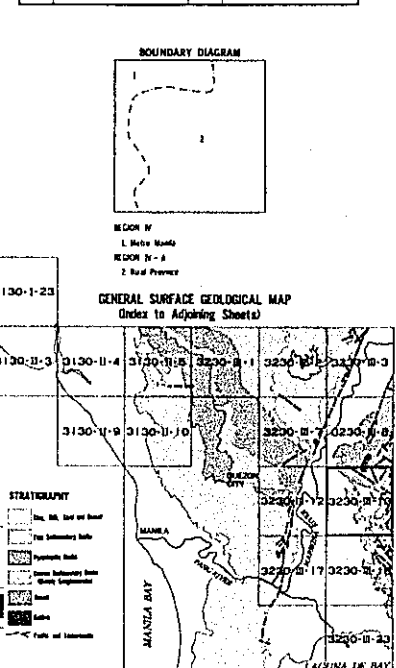
ADMINISTRATIVE BOUNDARY	Regional Boundary	Provincial Boundary	City and Municipal Boundary	Barometer	Dam	Wall
TRANSPORTATION	Main Road	Roadway	Bus Terminal	Government Building	Police Station	Fire Station
FACILITIES FOR RESCUE AND RELIEF	Health Center	Church	School	Recreation Center	Water Level Gauge Station	Rain Gauge Station
INDUSTRIAL AND OTHER FACILITIES	Storage Tank	Tidal Station	Water Level Gauge Station	Rain Gauge Station	Water Treatment Plant	River Pumping Station
BOUNDARY DIAGRAM	Region II	Region III	Region IV	Region V	Region VI	Region VII





MOUNTAIN	Top Flat and Ridge Flat Gentle and Moderate Slope Steep Slope More Than About 20° Ditch Line	COASTAL PLAIN AND DELTA	General Surface of Coastal Plain and Delta Former River Bed Natural Levee Upper Sand Bar Lower Sand Bar Backmarsh
PEDIMENT LANDFORM	Valley Colloidal Slope Small Alluvial fan	ARTIFICIALLY DEFORMED LAND	Canal Landslide Scar Cut and Filled Surface Banked Up Surface Cut Slope Banked Up Slope Filled Up Surface Under Construction Area
HILL AND PLATEAU	Top Flat Gentle Slope Less Than About 5° Moderate Slope More Than About 5° and 20° Steep Slope More Than About 20° Valley Flat	OTHERS	Main Watercourse Drainage Water Surface Landform Boundary Subsided Landform Boundary Car Flood Flat Hydrographic Line
TERRACE	Low Terrace Lower Terrace Ditch and Shadow Valley		
ALLUVIAL FAN	General Surface of Alluvial Fan Former River Bed Scour Surface of Flood Plain and Low Point Former River Bed Natural Levee Backmarsh Swamp and Marsh Dry River Bed		

2. GROUND ELEVATION		
Beach Mark	Microlevel Line	
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ADMINISTRATIVE BOUNDARY	Regional Boundary	Embankment
	Provincial Boundary	Dam
	City and Municipal Boundary	Wharf
TRANSPORTATION	Main Road	Recreation
	Roadway	Bridge
	Bus Terminal	Breakwater, Jetty and Causeway
	Government Building	Flood Gate
	Police Station	Channel Station
	Fire Station	Wharf and Pier
	Hospital	Lighthouse
	Health Center	Port and Harbor
	Church	Fishery Port
	School	Pipe Line and Cable on Sea Bottom
	Recreation Center	Fish Pier
INDUSTRIAL AND OTHER FACILITIES	Handwritten Notes pertaining to Features of Importance	Rock Beach or Reef
	Storage Tank	Stranded Wharf
	Tidal Station	Marine Pier and Soft Bed
	Water Level Gauge Station	Restricted Area
	Rain Gauge Station	Dumping Area
	Earthquake Observatory	
	Power Plant and Sub-Station	
	Water Treatment Plant	
	River Pumping Station	
	Well	



This map was prepared under a cooperative undertaking between the Government of the Republic of the Philippines and the Government of Japan.

Scale: 1:10,000

UNIVERSAL TRANSVERSE MERCATOR PROJECTION
 ZONE 51 CLARKE SPHEROID 1866 LUZON DATUM
 VERTICAL DATUM: MSL FOR HEIGHTS MLW FOR DEPTHS
 CONTOUR INTERVAL 1 METERS

35

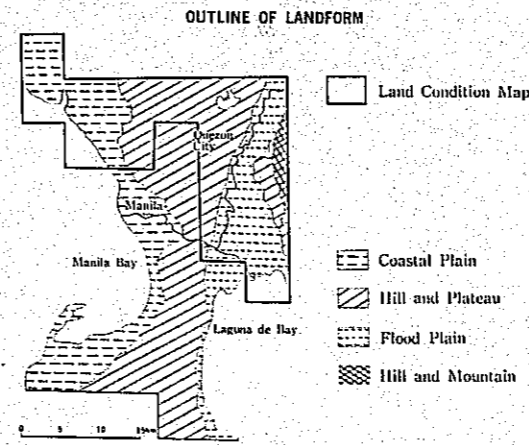
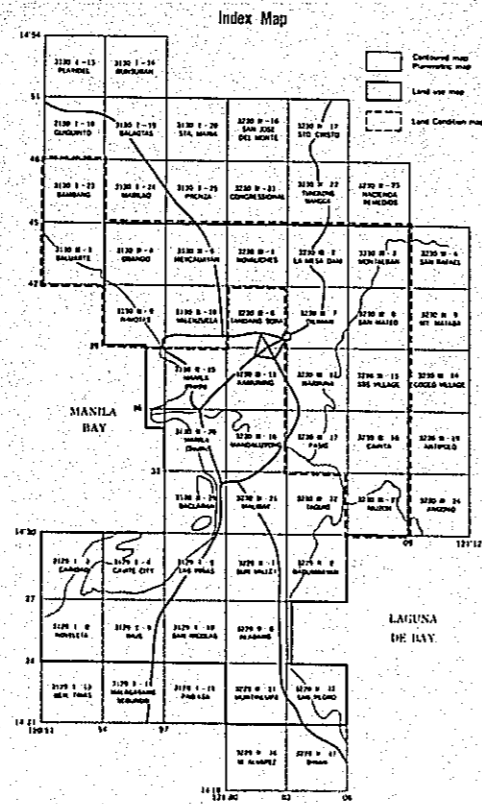
SSS VILLAGE
 Sheet No. 3230-III-35

Logos of the Philippine Department of Geology and Mines, the Japanese International Cooperation Agency (JICA), and the National Hydrographic Office.

METRO MANILA LAND CONDITION MAP
SCALE 1 : 10,000

INFORMATION AND USAGE OF
THE LAND CONDITION MAP

REPUBLIC OF THE PHILIPPINES



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The classes of landforms in the survey area are generally located as follows:

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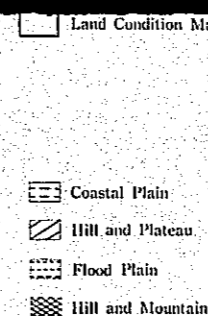
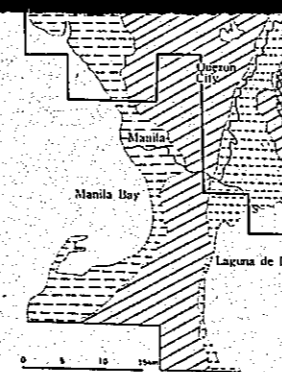
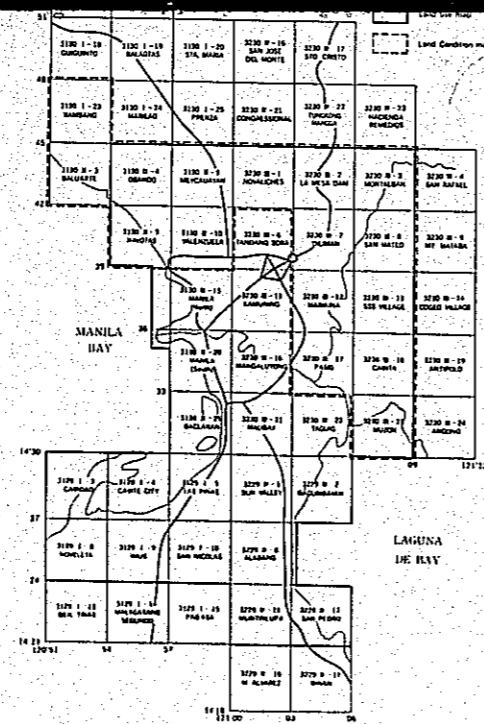
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Coastal Plain and Delta:	Blue-green
Artificially Deformed Land, Unstable Slope (Landslide Scar):	Red
Landform in Marine Area:	Silver gray
Water Surface:	Sky blue
Microrelief Line:	Brown
Organization and Facilities:	Black, Red
Ground Elevation, Annotation:	Black
Boundary Line, Unstable Slope (Cliff):	Violet
Base Map:	Dark gray

7. Definition of Selected Technical Terms

- 1) Knick Line ... Lines passing points on slopes of mountain-sides, which divide upper gentle slopes and lower steep slopes.
- 2) Talus ... Relatively steep depositional surfaces formed at lower parts of mountain-slopes by rain wash or land slide and consisting of larger grains of debris.
- 3) Colluvial Slope ... Depositional landforms with relatively gentle slopes, formed by debris and weathered material transported and sedimented by effects of rain wash and soil creep.
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- 10) Landslide Scar ... Vestiges of radical sliding of large masses of earth down slopes or cliffs.
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INFORMATION AND USAGE OF THE LAND CONDITION MAP

REPUBLIC OF THE PHILIPPINES

1. Background

To cope with many urban problems prevailing in the National Capital Region, the Philippine Government requested the Japanese Government in March 1984 for technical cooperation in the preparation of urban base maps, which represent the existing conditions of the Region in detail, as basic materials for the implementation of various public works as well as the establishment of diverse plans concerning disaster prevention, land use, urban redevelopment, etc.

In response to the request for technical cooperation, the Japanese Government sent preliminary survey teams to Manila in January through March 1985 for discussions with the authorities concerned in the Philippine Government and for field survey and data collection in the Region. The Japanese Government consequently agreed on a 4-year technical cooperation program starting in 1985.

1-1 Outline of those maps is as follows:

Contoured map (Topographic map)	1 : 10,000	1,500 km ² (57 sheets)
Planimetric map	1 : 10,000	1,500 km ² (57 sheets)
Land use map	1 : 10,000	82,000 m ² (33 sheets)
Land condition map	1 : 10,000	170 km ² (16 sheets)

(see Index Map)

1-2 The contoured map was completed in 1987. The aerial photographs taken in 1982 were used for field identification and stereo plotting. As for the major changes after aerial photography, the results of field completion conducted in 1986 and the interpretation of the aerial photographs taken in the same year were integrated.

1-3 The planimetric map was completed in 1987 by the combination of color separation plates of the contoured map.

1-4 The land use map was completed in 1989 using the contoured map as the base and integrating mainly the interpretation of the aerial photographs taken in 1982 and the results of field identification conducted in 1985.

1-5 The land condition map was completed in 1989 to represent landform classification, ground elevation, organization and facilities using the contoured map as the base. The representation was made mainly on the basis of the interpretation of the aerial photographs taken in 1982 and 1986, the field identification conducted in 1985 and the data provided by the agencies concerned in the Philippines.

2. Utilization of Land Condition Map

This land condition map is prepared using the 1:10,000 contoured map as the base on which the landform classification, ground elevation, organizations and facilities are printed in 12 colors.

It is possible to find out the following areas by reading the land condition map:

- 2-1 Areas affected by flood or high tide such as low or marshy land.
- 2-2 Areas where earthquake damage is expected due to unfavourable conditions of the surface layer.
- 2-3 Areas where ground subsidence is likely to take place such as coastal plain, delta and flood plain areas.
- 2-4 Artificially deformed land and unstable slopes in mountainous or hilly areas where disasters are expected.
- 2-5 Plateaus and gentle hilly areas being comparatively safe from flood or landslide damage, etc.

Therefore, the land condition map can provide basic information not only for disaster prevention but also for land development, and can be utilized more effectively together with the land use map.

3. Outline of Landform

The classes of landforms in the survey area are generally located as follows:

- 3-1 Coastal Plain
Coastal plain with elevation of less than 3m extending north to south along Manila Bay.
- 3-2 Hill and Plateau
The hills and plateaus, where Quezon City, Mandaluyong and Makati are located, extending north to south on the eastern side of the coastal plain. Elevations of the hills and plateaus around Pasig River are 20m-30m and gradually increase northward to 80m-100m.
- 3-3 Flood Plain
Around the Marikina River and Laguna de Bay, the flat lowland with an elevation of 1m-10m covers wide area of floodplain.
- 3-4 Hill and Mountain
The mountain area has an elevation of 200m-300m. The western side of the mountain area which is hilly, has an elevation of 50m-100m. In the mountains where top flats still remain, gentle slopes are generally prevailing although there are steep slopes along the river valleys.

4. Components of the Land Condition Map

The land condition map is composed of the following three major categories:

- Landform Classification,
- Ground Elevation,
- Organization and Facilities

These categories are then divided into 91 sub-classifications.

4-1 Landform Classification

As for the landform classification, various types of landform are classified into mountain, hill and plateau, lowland (flood plain, delta and others), etc. according to the form, formative processes and surface materials. In the detailed classification, the safety or susceptibility to disasters is also taken into account.

4-2 Ground Elevation

In the lowland area the ground elevation points and microrelief lines are shown in order to clarify its susceptibility to flooding and high tides.

4-3 Organization and Facilities

Regarding organization and facilities, emphasis is placed on those closely related to disaster prevention and land development. The facilities for disaster prevention and development, facilities for rescue and relief, observatory, facilities for supply and processing, river and coastal structure, etc. are represented.

5. Land Condition Survey

5-1 Landform Classification

(1) The landform classification was made mainly on the basis of the photo-interpretation of the aerial photographs taken in 1982 and 1986. Field identification was also conducted at the main sites in 1987.

(2) With regard to artificially deformed land (mainly banked up) in lowland (flood plain, delta, coastal plain, etc.) which is susceptible to natural disasters, the landform before deformation is also represented on the basis of the comparative interpretation of aerial photographs taken in 1968, 1982 and 1986.

5-2 Ground Elevation

In the lowland area the ground elevation points are represented by minor order leveling. On the basis of those leveling points, the spot heights and microrelief lines measured by photogrammetry are also represented.

5-3 Organization and Facilities

The organization and facilities are represented on the basis of the features shown on the 1:10,000 contoured maps and the data provided by BCGS and other agencies. Field survey was also conducted by BCGS and JICA.

6. Criteria for Representation on the Land Condition Map

6-1 Landform Classification

- (1) The minimum size for the representation of landform classification is generally 2mm x 2mm on the maps and that for the linear symbols is about 5mm on the maps.
- (2) The boundaries of the areas where the landform classification not clearly defined are delineated by broken lines.
- (3) The bars, tidal flats and bathymetric lines in marine areas are represented on the basis of the data provided by BCGS.

respectively. The values of both points are shown in meters, to the first decimal place.

(2) The microrelief lines are represented at 1m intervals.

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- (1) The river and coastal structures constructed across rivers of more than 4m in width or those with more than 50m in length are represented.
- (2) Regarding transportation, main roads of more than 1km in length are represented.
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- (5) The organization and facilities other than the above are represented according to the criteria for the 1:10,000 contoured maps.

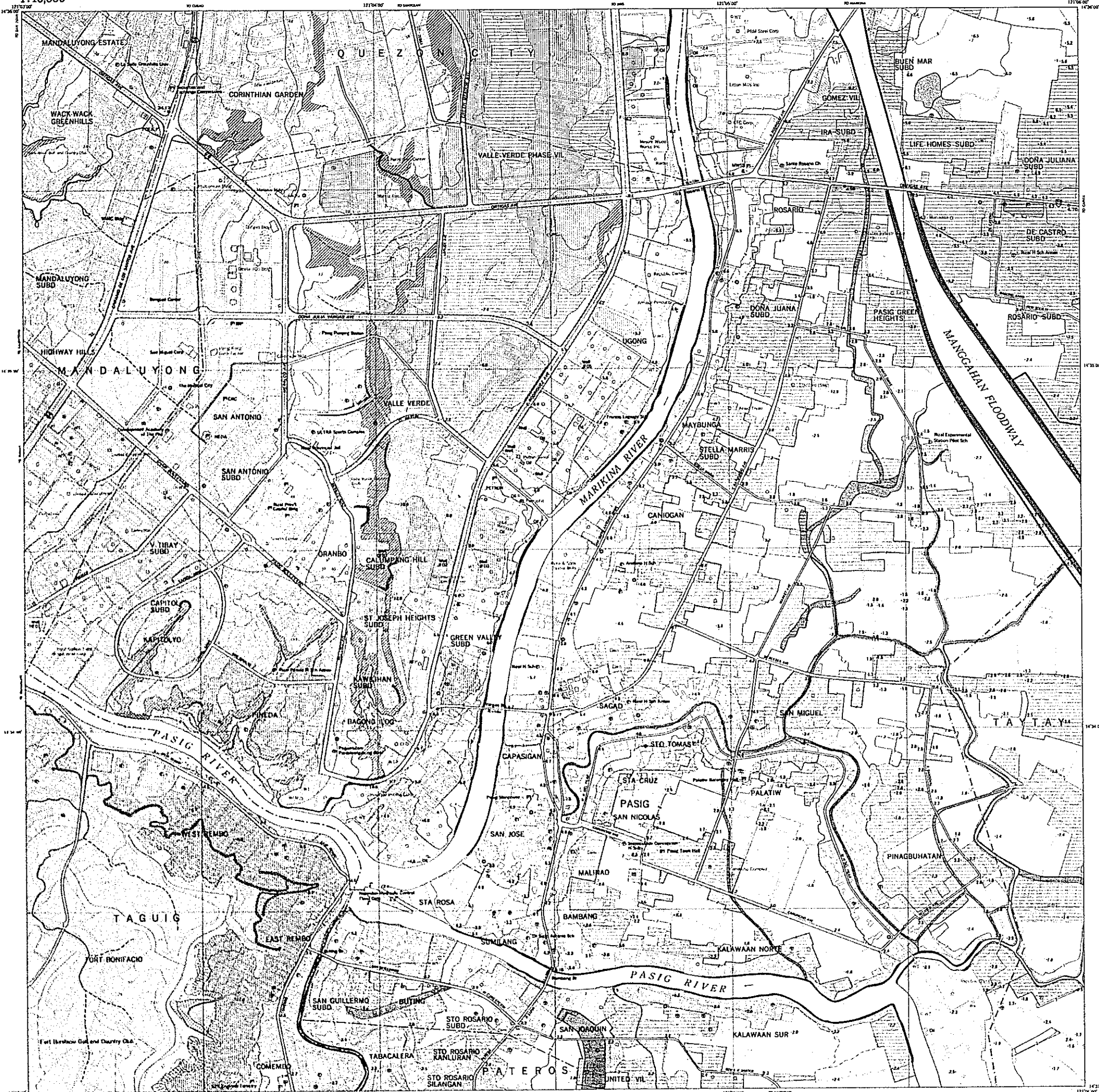
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Printing was conducted with 12 color separation plates (brown, violet, green, yellow, orange, light green, blue, sky blue, silver gray, red, black, dark gray) and their combinations to make the various land conditions easily identifiable.

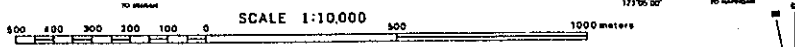
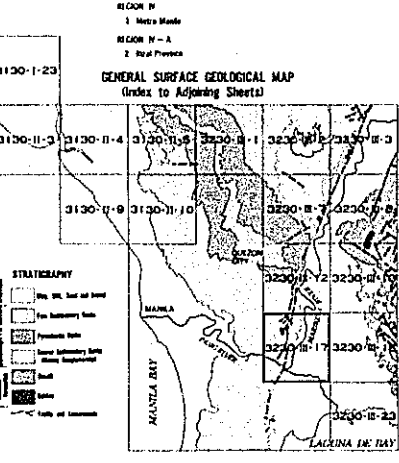
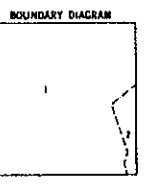
Mountain:	Brown
Piedmont Landform:	Yellow
Hill and Plateau, Terrace:	Orange-brown
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7. Definition of Selected Technical Terms

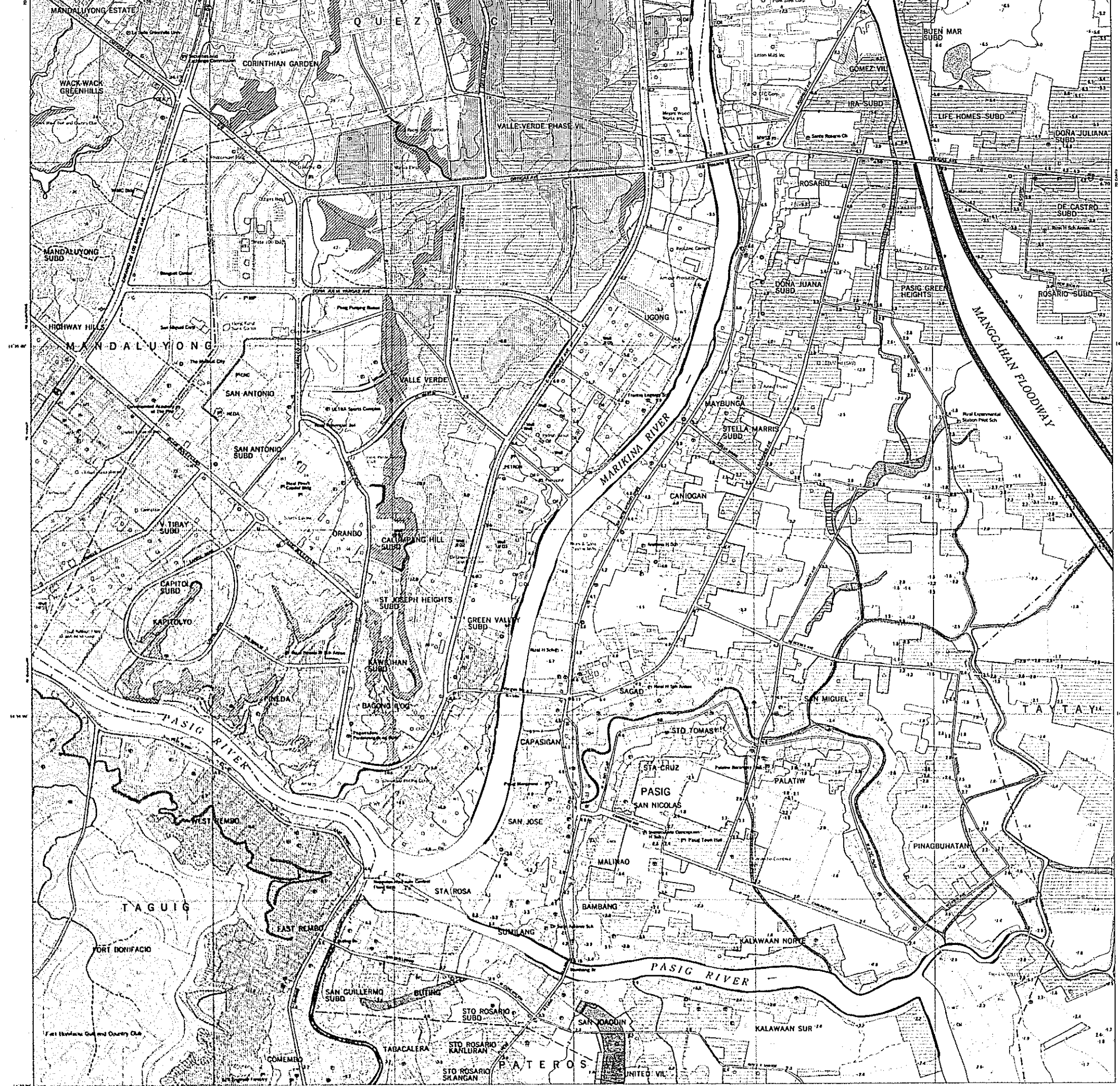
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1. LANDFORM CLASSIFICATION		
MOUNTAIN	Top Flat and Ridge Flat	Normal Surface of Lower Plateau and Delta
	Steep Slope (More Than About 20%)	Former River Bed
	Steep Slope (Less Than About 20%)	Natural Levee
	Knick Line	Upper Sand Bar
PRELUDE LANDFORM	Valley	Lower Sand Bar
	Cultural Slope	Backwash
	Small Alluvial Fan	Cliff
HILL AND PLATEAU	Top Flat	LANDSLIDE UNSTABLE SLOPE
	Scarp Slope (Less Than About 5%)	Landslide Scar
	Scarp Slope (Between About 5' and 20')	Cut and Raked Surface
	Steep Slope (More Than About 20%)	Banked Up Surface
	Valley Flat	Cut Slope
TERRACE	Low Terrace	Banked Up Slope
	Level Terrace	Fill Up Surface
	Deep and Shadow Valley	Under Construction Area
ALLUVIAL FAN	General Surface of Alluvial Fan	Main Watershed
	Former River Bed	Drainage
		Water Surface
FLOOD PLAIN AND VALLEY PLAIN	Normal Surface of Flood Plain and Valley Plain	Landform Boundary
	Former River Bed	Individual Landform Boundary
	Natural Levee	Ear
	Backwash	Tidal Flat
	Suicrop and Marsh	Hydrographic Line
	Dry River Bed	
		MARINE AREA
		Beach
		Microtidal Line
		Grand Division Point
		Contour Line
2. GROUND ELEVATION		
GROUND ELEVATION POINT	Beach Mark	Microtidal Line
	Grand Division Point	Contour Line
3. ORGANIZATION AND PUBLIC FACILITIES		
ADMINISTRATIVE BOUNDARY	Regional Boundary	Fachbackant
	Provincial Boundary	Dam
	City and Municipal Boundary	Wall
TRANSPORTATION	Main Road	Recreation
	Railway	Bridge
	Road Terminal	Breakwater, Jetty and Caemery
INDUSTRIAL AND COMMERCIAL	Government Building	Flood Gate
	Police Station	Drainage Station
	Fire Station	Wharf and Pier
FACILITIES FOR RESCUE AND RELIEF	Hospital	Lighthouse
	Health Center	Port and Harbor
	Church	Fishery Port
	School	Pipe Line and Cable on Sea Bottom
	Peace Center	Tide Pm
INDUSTRIAL AND OTHER FEATURES IN COASTAL AREA	Manufacturing, Storage and Loading Facilities of Shipping Stations	Rock Awash or Reef
	Storage Tank	Stranded Wreck
	Tidal Station	Marine Pier and Salt Bed
OBSERVATORY	Water Level Gauge Station	Restricted Area
	Rain Gauge Station	Dumping Area
	Earthquake Observatory	
FACILITIES FOR SUPPLY AND PROCESSING	Power Plant and Sub-Station	
	Water Treatment Plant	
	River Pumping Station	
	Wet	



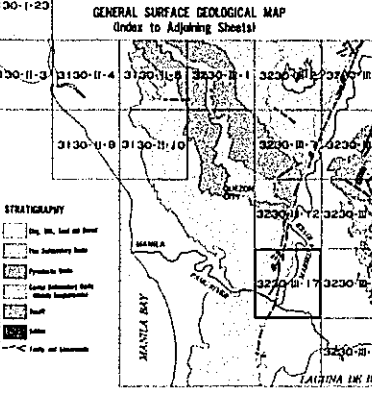
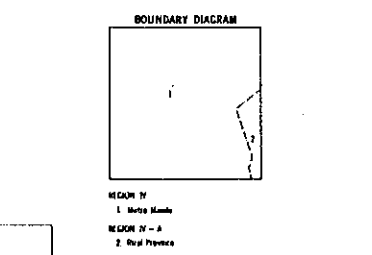
This map was produced under a cooperative arrangement between the Government of the Republic of the Philippines and the Department of State.



GROUND ELEVATION	Top Flat and Ridge Flat	Ground Surface of Coastal Plain and Delta
Steep Slope (Less Than About 20%)	Forest River Bed	Natural Levee
Shallow Slope (More Than About 20%)	Upper Sand Bar	Lower Sand Bar
Backwash	Backwash	
Clack Line	Clack Line	
Taluk	Taluk	
Canal Slope	Canal Slope	
Small Alluvial Fan	Small Alluvial Fan	
Top Flat	Top Flat	
Ground Slope (Less Than About 5%)	Landslide Scar	
Moderate Slope (Between About 5 and 20%)	Cut and Rolled Surface	
Steep Slope (More Than About 20%)	Banked Up Surface	
Valley Flat	Valley Flat	
Low Terrace	Banked Up Slope	
Lower Terrace	Filled Up Surface	
Deert and Shadow Valley	Under Construction Area	
General Surface of Alluvial Fan	Mark Waterbed	
Farmer River Bed	Drainage	
Water Surface	Water Surface	
Forest Surface of Flood Plain and Valley Plain	Landform Boundary	
Farmer River Bed	Industrial Landform Boundary	
Natural Levee	Bar	
Backwash	Thal Flat	
Suana and Marsh	Barometric Line	
Dry River Bed		

2. GROUND ELEVATION	
Beach Mark	0.5-1.1
Ground Elevation Point	1.2-1.8
Microrelief Line	
Contour Line	

3. ORGANIZATION AND PUBLIC FACILITIES		
ADMINISTRATIVE BOUNDARY	Regional Boundary	Embankment
Provincial Boundary	City and Municipal Boundary	Dam
TRANSPORTATION	Main Road	Revetment
Railway	Bus Terminal	Bridge
MANAGEMENT FACILITIES	Government Building	Weakwater, Jetty and Dam
Public Station	Police Station	Flood Gate
Fire Station	Health Center	Drainage Station
FACILITIES FOR RESCUE AND RELIEF	Church	Wharf and Pier
School	Peace Center	Lighthouse
INDUSTRIAL AND AGRICULTURAL FACILITIES	Storage Tank	Port and Harbor
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Water Treatment Plant	River Pumping Station	Rock Awash or Reef
Well		Stranded Wreck
		Marine Piling and Salt Bed
		Restricted Area
		Chopping Area



SCALE 1:10,000

UNIVERSAL TRANSVERSE MERCATOR PROJECTION
 ZONE 51 CLARKE SPHEROID 1866 LUZON DATUM
 VERTICAL DATUM: MSL FOR HEIGHTS MLLW FOR DEPTHS
 CONTOUR INTERVAL 4 METERS

PASIG
 Sheet No. 3230-III-17

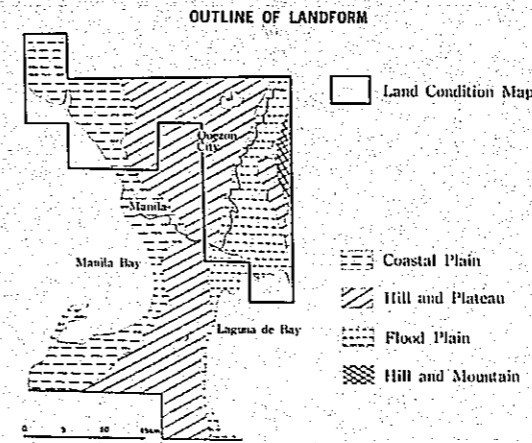
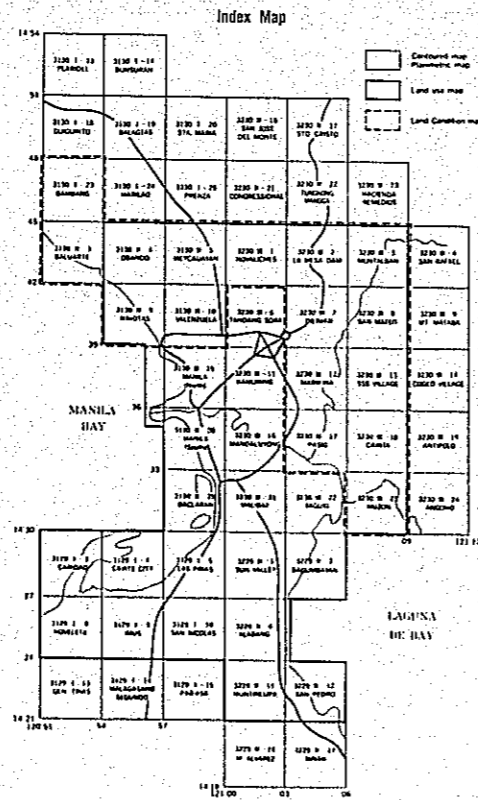


This map was prepared under a cooperative arrangement between the Government of the Republic of the Philippines and the Government of Japan. It is based on the following data: Aerial Photographs, 1960-1962, 1962-1964; Topographic Maps, 1960-1962, 1962-1964; Survey Data of the Philippine Geodetic Survey, 1960-1962, 1962-1964; and other data. The map is published by the National Mapping and Research Institute, Manila, Philippines. Copyright © 1965.

METRO MANILA LAND CONDITION MAP
SCALE 1 : 10,000

INFORMATION AND USAGE OF
THE LAND CONDITION MAP

REPUBLIC OF THE PHILIPPINES



2. Utilization of Land Condition Map

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It is possible to find out the following areas by reading the land condition map:

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Therefore, the land condition map can provide basic information not only for disaster prevention but also for land development, and can be utilized more effectively together with the land use map.

3. Outline of Landform

The classes of landforms in the survey area are generally located as follows:

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Coastal plain with elevation of less than 3m extending north to south along Manila Bay.
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The hills and plateaus, where Quezon City, Mandaluyong and Makati are located, extending north to south on the eastern side of the coastal plain. Elevations of the hills and plateaus around Pasig River are 20m-30m and gradually increase northward to 80m-100m.
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(see Index Map)

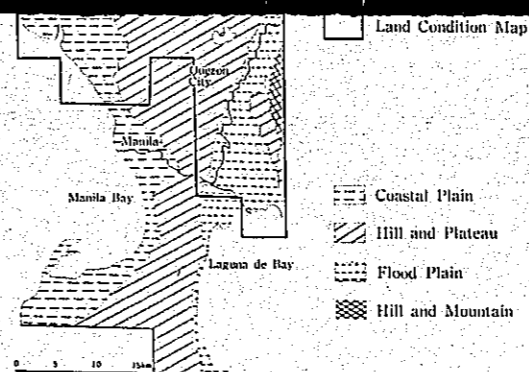
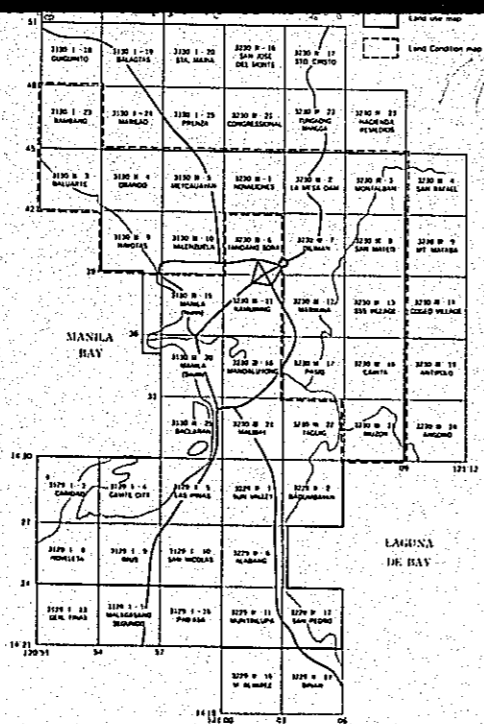
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INFORMATION AND USAGE OF THE LAND CONDITION MAP



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In the lowland area the ground elevation points and microrelief lines are shown in order to clarify its susceptibility to flooding and high tides.

4-3 Organization and Facilities

Regarding organization and facilities, emphasis is placed on those closely related to disaster prevention and land development. The facilities for disaster prevention and development, facilities for rescue and relief, observatory, facilities for supply and processing, river and coastal structure, etc. are represented.

5. Land Condition Survey

5-1 Landform Classification

(1) The landform classification was made mainly on the basis of the photo-interpretation of the aerial photographs taken in 1982 and 1986. Field identification was also conducted at the main sites in 1987.

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In the lowland area the ground elevation points are represented by minor order leveling. On the basis of those leveling points, the spot heights and microrelief lines measured by photogrammetry are also represented.

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The organization and facilities are represented on the basis of the features shown on the 1:10,000 contoured maps and the data provided by BCGS and other agencies. Field survey was also conducted by BCGS and JICA.

6. Criteria for Representation on the Land Condition Map

6-1 Landform Classification

- (1) The minimum size for the representation of landform classification is generally 2mm x 2mm on the maps and that for the linear symbols is about 5mm on the maps.
- (2) The boundaries of the areas where the landform classification not clearly defined are delineated by broken lines.
- (3) The bars, tidal flats and bathymetric lines in marine areas are represented on the basis of the data provided by BCGS.

2. Utilization of Land Condition Map

This land condition map is prepared using the 1:10,000 contoured map as the base on which the landform classification, ground elevation, organizations and facilities are printed in 12 colors.

It is possible to find out the following areas by reading the land condition map:

- 2-1 Areas affected by flood or high tide such as low or marshy land.
- 2-2 Areas where earthquake damage is expected due to unfavourable conditions of the surface layer.
- 2-3 Areas where ground subsidence is likely to take place such as coastal plain, delta and flood plain areas.
- 2-4 Artificially deformed land and unstable slopes in mountainous or hilly areas where disasters are expected.
- 2-5 Plateaus and gentle hilly areas being comparatively safe from flood or landslide damage, etc.

Therefore, the land condition map can provide basic information not only for disaster prevention but also for land development, and can be utilized more effectively together with the land use map.

3. Outline of Landform

The classes of landforms in the survey area are generally located as follows:

- 3-1 Coastal Plain
Coastal plain with elevation of less than 3m extending north to south along Manila Bay.
- 3-2 Hill and Plateau
The hills and plateaus, where Quezon City, Mandaluyong and Makati are located, extending north to south on the eastern side of the coastal plain. Elevations of the hills and plateaus around Pasig River are 20m ~ 30m and gradually increase northward to 80m ~ 100m.
- 3-3 Flood Plain
Around the Marikina River and Laguna de Bay, the flat lowland with an elevation of 1m ~ 10m covers wide area of floodplain.
- 3-4 Hill and Mountain
The mountain area has an elevation of 200m ~ 380m. The western side of the mountain area which is hilly, has an elevation of 50m ~ 100m. In the mountains where top flats still remain, gentle slopes are generally prevailing although there are steep slopes along the river valleys.

REPUBLIC OF THE PHILIPPINES

1. Background

To cope with many urban problems prevailing in the National Capital Region, the Philippine Government requested the Japanese Government in March 1981 for technical cooperation in the preparation of urban base maps, which represent the existing conditions of the Region in detail, as basic materials for the implementation of various public works as well as the establishment of diverse plans concerning disaster prevention, land use, urban redevelopment, etc.

In response to the request for technical cooperation, the Japanese Government sent preliminary survey teams to Manila in January through March 1985 for discussions with the authorities concerned in the Philippine Government and for field survey and data collection in the Region. The Japanese Government consequently agreed on a 1-year technical cooperation program starting in 1985.

1-1 Outline of these maps is as follows:

Contoured map (Topographic map)	1 : 10,000	1,500km ² (57 sheets)
Planimetric map	1 : 10,000	1,500km ² (57 sheets)
Land use map	1 : 10,000	823km ² (33 sheets)
Land condition map	1 : 10,000	476km ² (16 sheets)

(see Index Map)

1-2 The contoured map was completed in 1987. The aerial photographs taken in 1982 were used for field identification and stereo plotting. As for the major changes after aerial photography, the results of field completion conducted in 1986 and the interpretation of the aerial photographs taken in the same year were integrated.

1-3 The planimetric map was completed in 1987 by the combination of color separation plates of the contoured map.

1-4 The land use map was completed in 1989 using the contoured map as the base and integrating mainly the interpretation of the aerial photographs taken in 1982 and the results of field identification conducted in 1985.

1-5 The land condition map was completed in 1989 to represent landform classification, ground elevation, organization and facilities using the contoured map as the base. The representation was made mainly on the basis of the interpretation of the aerial photographs taken in 1982 and 1986, the field identification conducted in 1985 and the data provided by the agencies concerned in the Philippines.

respectively. The values of both points are shown in meters, to the first decimal place.

(2) The microrelief lines are represented at 1m intervals.

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- (1) The river and coastal structures constructed across rivers of more than 4m in width or those with more than 50m in length are represented.
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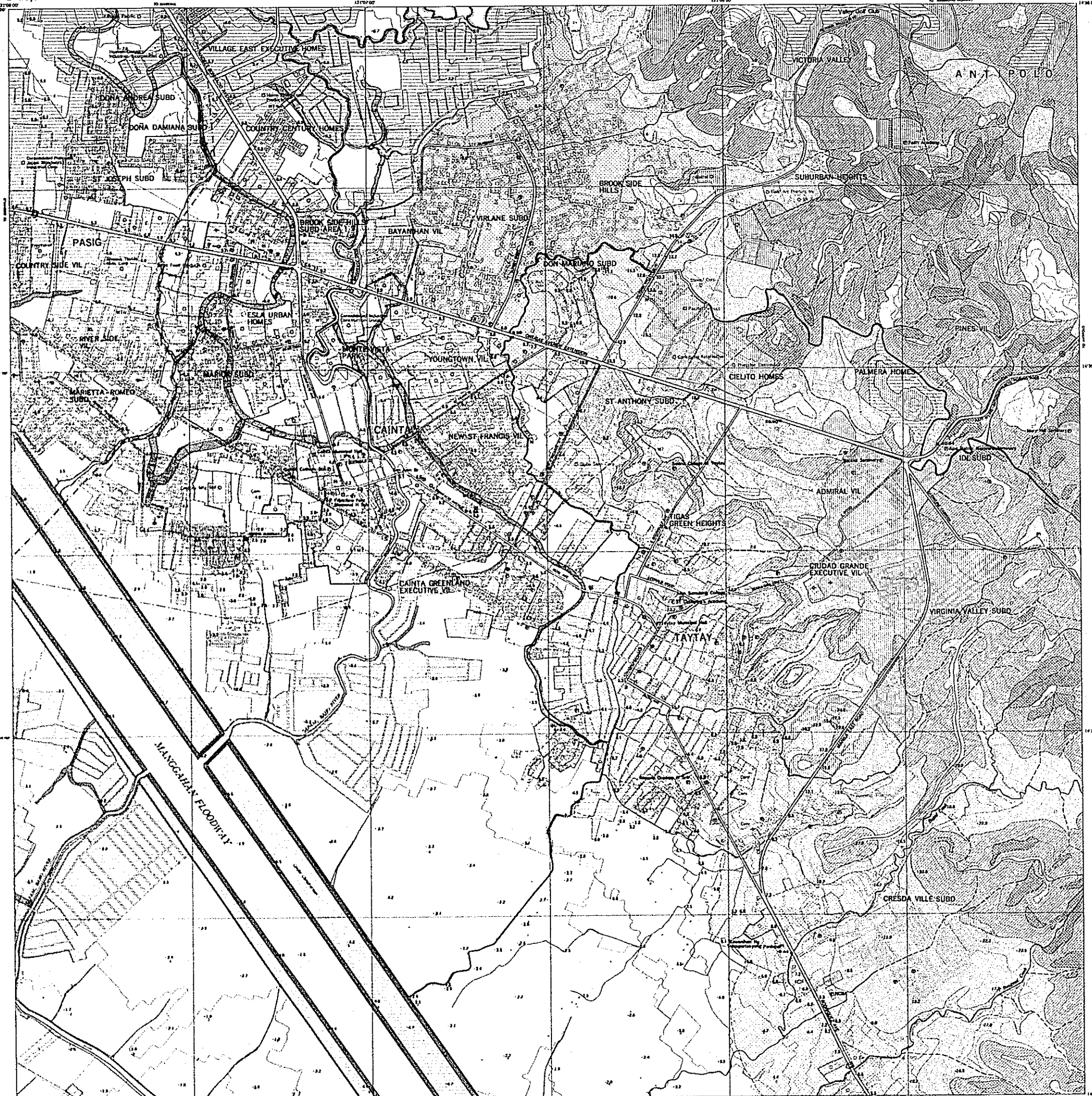
6-4 Color Scheme

Printing was conducted with 12 color separation plates (brown, violet, green, yellow, orange, light green, blue, sky blue, silver gray, red, black, dark gray) and their combinations to make the various land conditions easily identifiable.

Mountain:	Brown
Piedmont Landform:	Yellow
Hill and Plateau, Terrace:	Orange-brown
Flood Plain and Valley Plain:	Light green
Coastal Plain and Delta:	Blue-green
Artificially Deformed Land, Unstable Slope (Landslide Scar):	Red
Landform in Marine Area:	Silver gray
Water Surface:	Sky blue
Microrelief Line:	Brown
Organization and Facilities:	Black, Red
Ground Elevation, Annotation:	Black
Boundary Line, Unstable Slope (Cliff):	Violet
Base Map:	Dark gray

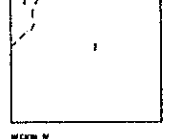
7. Definition of Selected Technical Terms

- 1) Knick Line ... Lines passing points on slopes of mountain-sides, which divide upper gentle slopes and lower steep slopes.
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- 10) Landslide Scar ... Vestiges of radical sliding of large masses of earth down slopes or cliffs.
- 11) Filled Up Surface ... Artificial land formed by filling marshes, lakes or river beds to the level of the surrounding surfaces.
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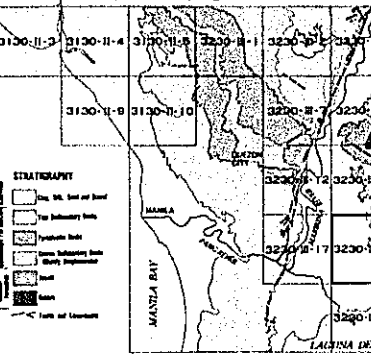


1. LANDFORM CLASSIFICATION																					
GROUND ELEVATION	<table border="1"> <tr> <td>Beach Mark</td> <td>0.2-1</td> <td>Microrelief Line</td> </tr> <tr> <td>Ground Elevation Point</td> <td>0.2-1</td> <td>Contour Line</td> </tr> </table>	Beach Mark	0.2-1	Microrelief Line	Ground Elevation Point	0.2-1	Contour Line														
Beach Mark	0.2-1	Microrelief Line																			
Ground Elevation Point	0.2-1	Contour Line																			
3. ORGANIZATION AND PUBLIC FACILITIES	<table border="1"> <tr> <td>ADMINISTRATIVE BOUNDARY</td> <td> Regional Boundary Provincial Boundary City and Municipal Boundary Main Road Railway Bus Terminal Government Building Police Station The Station Hospital Health Center Church School Recreational Center </td> <td>EMBARKMENT</td> <td> Embankment Dam War Revetment Bridge Breakwater, Jetty and Causeway Flood Gate Drainage Station Wharf and Pier Light House Port and Harbor Fishery Port Pipe Line and Cable on Sea Bottom Fish Pen Rack Wash or Reef Stranded Wreck Marker Pile and Soft Bed Restricted Area Dumping Area </td> </tr> <tr> <td>TRANSPORTATION</td> <td> Main Road Railway Bus Terminal Government Building Police Station The Station Hospital Health Center Church School Recreational Center </td> <td>RIVER AND COASTAL STRUCTURE</td> <td> Embankment Dam War Revetment Bridge Breakwater, Jetty and Causeway Flood Gate Drainage Station Wharf and Pier Light House Port and Harbor Fishery Port Pipe Line and Cable on Sea Bottom Fish Pen Rack Wash or Reef Stranded Wreck Marker Pile and Soft Bed Restricted Area Dumping Area </td> </tr> <tr> <td>INDUSTRIAL AND RESERVE AND RELIEF</td> <td> Warehouse Health Center Church School Recreational Center </td> <td>FACILITIES AND OTHER FEATURES IN COASTAL AREA</td> <td> Embankment Dam War Revetment Bridge Breakwater, Jetty and Causeway Flood Gate Drainage Station Wharf and Pier Light House Port and Harbor Fishery Port Pipe Line and Cable on Sea Bottom Fish Pen Rack Wash or Reef Stranded Wreck Marker Pile and Soft Bed Restricted Area Dumping Area </td> </tr> <tr> <td>INDUSTRIAL AND RESERVE AND RELIEF</td> <td> Warehouse Health Center Church School Recreational Center </td> <td>OTHERS</td> <td> Embankment Dam War Revetment Bridge Breakwater, Jetty and Causeway Flood Gate Drainage Station Wharf and Pier Light House Port and Harbor Fishery Port Pipe Line and Cable on Sea Bottom Fish Pen Rack Wash or Reef Stranded Wreck Marker Pile and Soft Bed Restricted Area Dumping Area </td> </tr> <tr> <td>INDUSTRIAL AND RESERVE AND RELIEF</td> <td> Warehouse Health Center Church School Recreational Center </td> <td>OTHERS</td> <td> Embankment Dam War Revetment Bridge Breakwater, Jetty and Causeway Flood Gate Drainage Station Wharf and Pier Light House Port and Harbor Fishery Port Pipe Line and Cable on Sea Bottom Fish Pen Rack Wash or Reef Stranded Wreck Marker Pile and Soft Bed Restricted Area Dumping Area </td> </tr> </table>	ADMINISTRATIVE BOUNDARY	Regional Boundary Provincial Boundary City and Municipal Boundary Main Road Railway Bus Terminal Government Building Police Station The Station Hospital Health Center Church School Recreational Center	EMBARKMENT	Embankment Dam War Revetment Bridge Breakwater, Jetty and Causeway Flood Gate Drainage Station Wharf and Pier Light House Port and Harbor Fishery Port Pipe Line and Cable on Sea Bottom Fish Pen Rack Wash or Reef Stranded Wreck Marker Pile and Soft Bed Restricted Area Dumping Area	TRANSPORTATION	Main Road Railway Bus Terminal Government Building Police Station The Station Hospital Health Center Church School Recreational Center	RIVER AND COASTAL STRUCTURE	Embankment Dam War Revetment Bridge Breakwater, Jetty and Causeway Flood Gate Drainage Station Wharf and Pier Light House Port and Harbor Fishery Port Pipe Line and Cable on Sea Bottom Fish Pen Rack Wash or Reef Stranded Wreck Marker Pile and Soft Bed Restricted Area Dumping Area	INDUSTRIAL AND RESERVE AND RELIEF	Warehouse Health Center Church School Recreational Center	FACILITIES AND OTHER FEATURES IN COASTAL AREA	Embankment Dam War Revetment Bridge Breakwater, Jetty and Causeway Flood Gate Drainage Station Wharf and Pier Light House Port and Harbor Fishery Port Pipe Line and Cable on Sea Bottom Fish Pen Rack Wash or Reef Stranded Wreck Marker Pile and Soft Bed Restricted Area Dumping Area	INDUSTRIAL AND RESERVE AND RELIEF	Warehouse Health Center Church School Recreational Center	OTHERS	Embankment Dam War Revetment Bridge Breakwater, Jetty and Causeway Flood Gate Drainage Station Wharf and Pier Light House Port and Harbor Fishery Port Pipe Line and Cable on Sea Bottom Fish Pen Rack Wash or Reef Stranded Wreck Marker Pile and Soft Bed Restricted Area Dumping Area	INDUSTRIAL AND RESERVE AND RELIEF	Warehouse Health Center Church School Recreational Center	OTHERS	Embankment Dam War Revetment Bridge Breakwater, Jetty and Causeway Flood Gate Drainage Station Wharf and Pier Light House Port and Harbor Fishery Port Pipe Line and Cable on Sea Bottom Fish Pen Rack Wash or Reef Stranded Wreck Marker Pile and Soft Bed Restricted Area Dumping Area
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BOUNDARY DIAGRAM

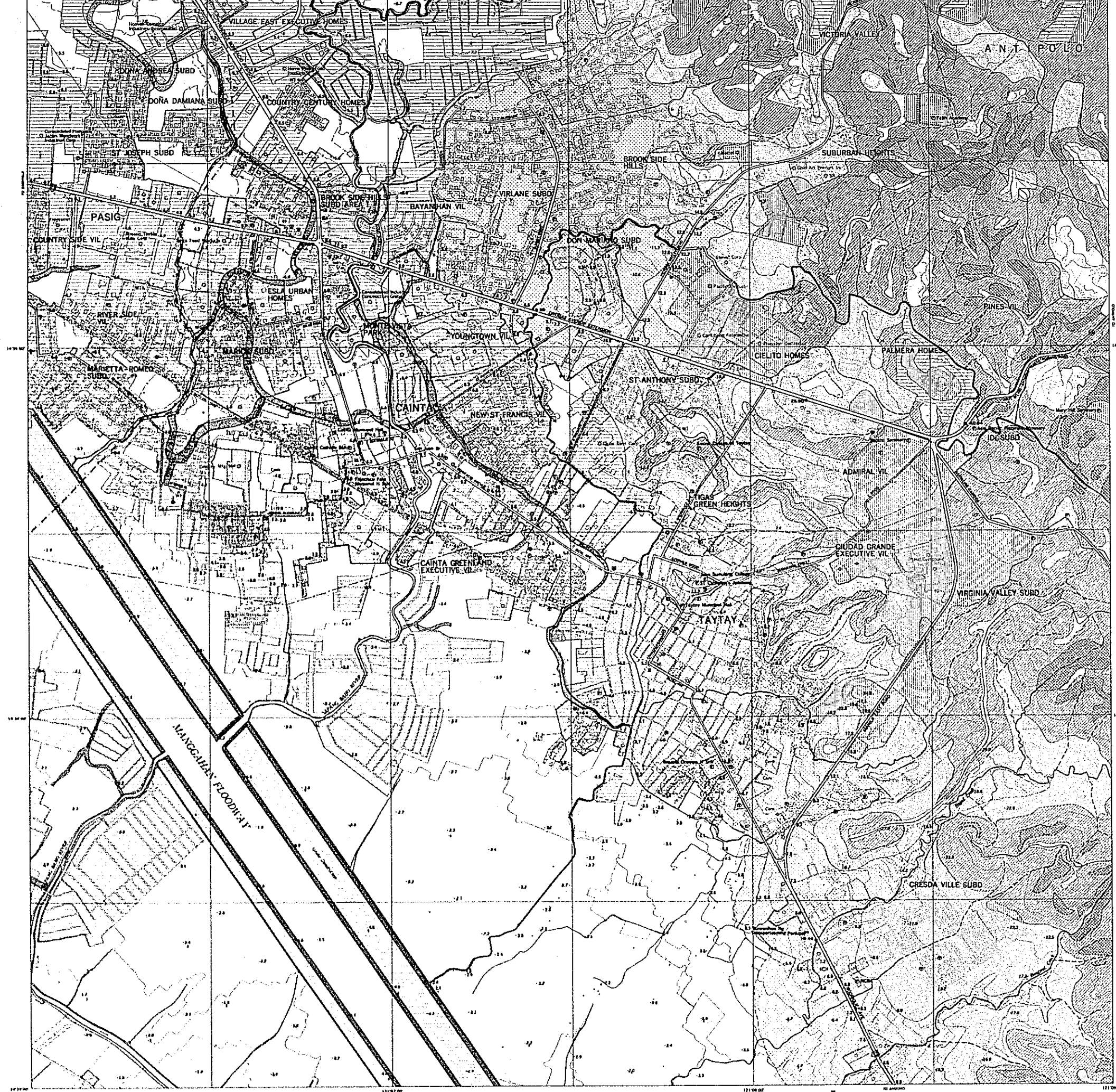


GENERAL SURFACE GEOLOGICAL MAP (Index to Adjoining Sheets)



This map was prepared under a cooperative arrangement between the Government of the Republic of the Philippines and the Government of Italy.

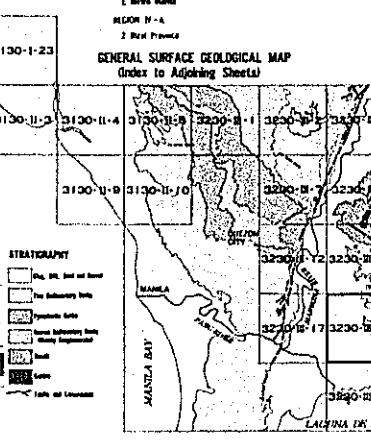
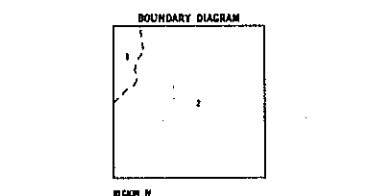
SCALE 1:10,000
0 100 200 300 400 500 600 700 800 900 1000 meters



MOUNTAIN	Top Flat and Ridge Flat Steep and Moderate Slope (Less Than About 20°) Steeper Slope (More Than About 20°) Black Line	COASTAL PLAIN AND DELTA	Coastal Plain and Delta Coastal River Bed Natural Levee Upper Sand Bar Lower Sand Bar Backwash
PLATEAU	Top Flat Sloping Moderate Slope (Between About 5° and 20°) Steeper Slope (More Than About 20°) Valley Flat	UNSTABLE SLOPE	Cut Landslide Scar Cut and Baked Surface Banked Up Surface Cut Slope
HILL AND PLATEAU	Low Terrace Lower Terrace Dip and Shallow Valley	ARTIFICIALLY OBTAINED LAND	Banked Up Slope Flood Up Surface Under Construction Area
ALLUVIAL FAN	General Surface of Alluvial Fan Former River Bed	OTHERS	Main Watercourse Drainage Water Surface Landform Boundary Substrate Landform Boundary
FLOOD PLAIN AND VALLEY FLOOR	General Surface of Flood Plain and Valley Floor Natural Levee Backwash Swamp and Marsh Dry River Bed	MARINE AREA	Bar Tidal Flat Hydrographic Line

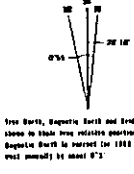
2. GROUND ELEVATION	
Beach Mark	0.2-1
Ground Elevation Point	+2 -6.9
Micro Relief Line	
Contour Line	

3. ORGANIZATION AND PUBLIC FACILITIES		
ADMINISTRATIVE BOUNDARY	Regional Boundary Provincial Boundary City and Municipal Boundary	Embarkment Dike Wall
TRANSPORTATION	Main Road Railway Bus Terminal	Retortment Bridge Breakwater, Jetty and Pier
UTILITIES AND SERVICES	Government Building Police Station Fire Station Hospital Health Center Church School Rescue Center	Flood Gate Drainage Station Wharf and Pier Lighthouse Port and Harbor Fishery Port Tide Gauge and Tide Station Fish Pen
INDUSTRIAL AND OTHER FACILITIES IN COASTAL AREA	Manufacturing Storage and Handling Terminal or Storage Station Storage Tank Tidal Station Water Level Gauge Station Rain Gauge Station Landscape Observatory	Black Beach or Reef Stranded Wreck Highway Flood and Salt Bed Restricted Area Dumping Area
FACILITIES FOR SUPPLY AND PROCESSING	Power Plant and Sub-Station Water Treatment Plant Reef Pumping Station Well	



This map was produced under a cooperative understanding between the Department of the Republic of the Philippines and the Government of Japan.
 Base Map: Geographical Map 1967 (1:50,000-1:100,000)
 Aerial Photographs: 1959-1960, 1962 & 1963
 Base Contours of Information: 1:50,000, 1:100,000, 1:200,000, 1:500,000, 1:1,000,000
 Distributed by National Mapping and Geomatics Information Institute (NMGII)
 First Edition: 1967, Second Edition: 1970, Third Edition: 1975
 © COPYRIGHT DENIED

SCALE 1:10,000
 0 100 200 300 400 500 600 700 800 900 1000 METERS
 UNIVERSAL TRANSVERSE MERCATOR PROJECTION
 ZONE 51 CLARKE SPHEROID 1866 LUZON DATUM
 VERTICAL DATUM: MSL FOR HEIGHTS MLLW FOR DEPTHS
 CONTOUR INTERVAL 4 METERS

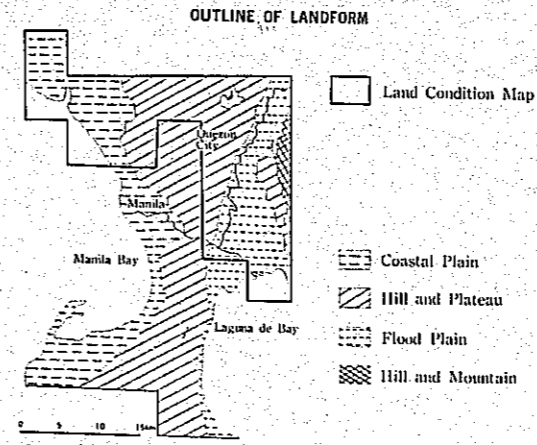
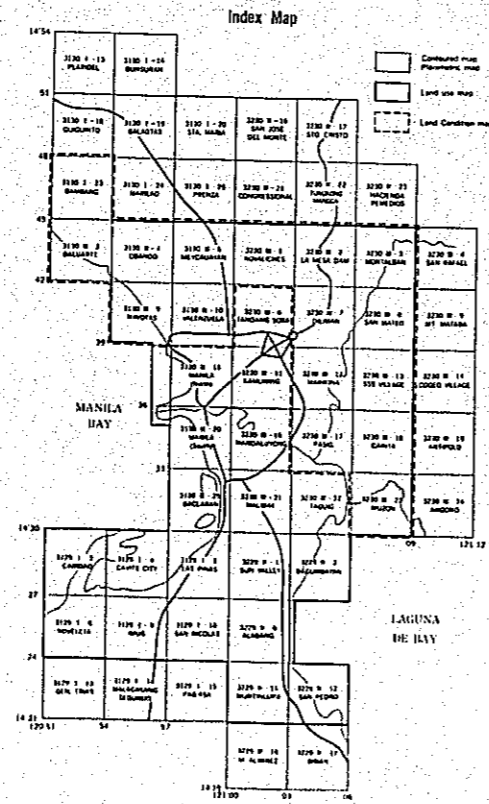


The North, Magnetic North and True North are shown in their true relative positions. Magnetic North is based on the 1985 and more recent surveys by the IGC.

CAINTA
 Sheet No. 3230-III-18



METRO MANILA LAND CONDITION MAP
SCALE 1 : 10,000



INFORMATION AND USAGE OF
THE LAND CONDITION MAP

REPUBLIC OF THE PHILIPPINES

2. Utilization of Land Condition Map

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The mountain area has an elevation of 200m-300m. The western side of the mountain area which is hilly, has an elevation of 50m-100m. In the mountains where top flats still remain, gentle slopes are generally prevailing although there are steep slopes along the river valleys.

4. Components of the Land Condition Map

The land condition map is composed of the following three major categories:

- Landform Classification,
- Ground Elevation,
- Organization and Facilities

These categories are then divided into 91 sub-classifications.

4-1 Landform Classification

As for the landform classification, various types of landform are classified into mountain, hill and plateau, lowland (flood plain, delta and others), etc. according to the form, formative processes and surface materials. In the detailed classification, the safety or susceptibility to disasters is also taken into account.

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In the lowland area the ground elevation points and microrelief lines are shown in order to clarify its susceptibility to flooding and high tides.

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- (1) The minimum size for the representation of landform classification is generally 2mm x 2mm on the maps and that for the linear symbols is about 5mm on the maps.
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(see Index Map)

1-2 The contoured map was completed in 1987. The aerial photographs taken in 1982 were used for field identification and stereo plotting. As for the major changes after aerial photography, the results of field completion conducted in 1986 and the interpretation of the aerial photographs taken in the same year were integrated.

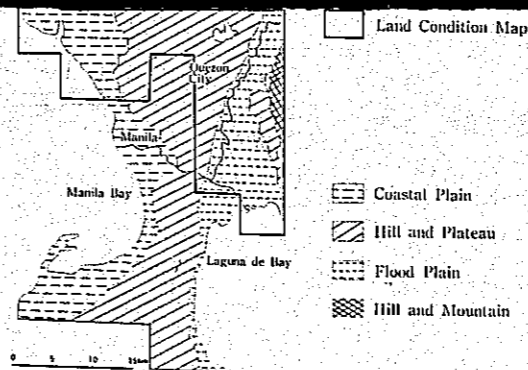
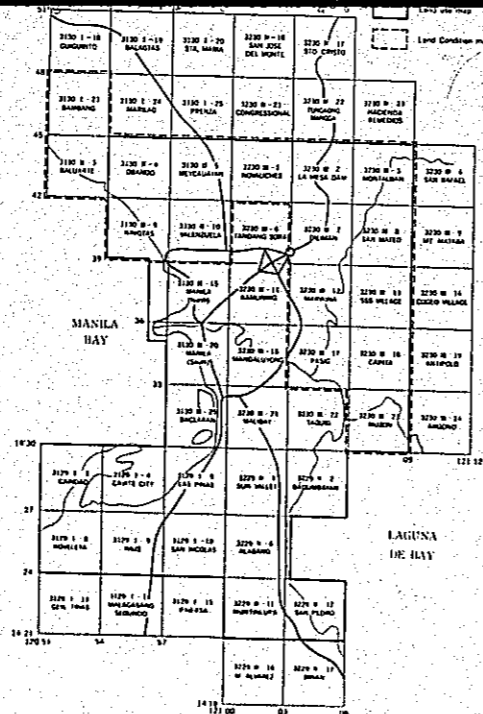
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INFORMATION AND USAGE OF THE LAND CONDITION MAP

REPUBLIC OF THE PHILIPPINES



4. Components of the Land Condition Map

The land condition map is composed of the following three major categories:

- Landform Classification,
- Ground Elevation,
- Organization and Facilities

These categories are then divided into 91 sub-classifications.

4-1 Landform Classification

As for the landform classification, various types of landform are classified into mountain, hill and plateau, lowland (flood plain, delta and others), etc. according to the form, formative processes and surface materials. In the detailed classification, the safety or susceptibility to disasters is also taken into account.

4-2 Ground Elevation

In the lowland area the ground elevation points and microrelief lines are shown in order to clarify its susceptibility to flooding and high tides.

4-3 Organization and Facilities

Regarding organization and facilities, emphasis is placed on those closely related to disaster prevention and land development. The facilities for disaster prevention and development, facilities for rescue and relief, observatory, facilities for supply and processing, river and coastal structure, etc. are represented.

5. Land Condition Survey

5-1 Landform Classification

(1) The landform classification was made mainly on the basis of the photo-interpretation of the aerial photographs taken in 1982 and 1986. Field identification was also conducted at the main sites in 1987.

(2) With regard to artificially deformed land (mainly banked up) in lowland (flood plain, delta, coastal plain, etc.) which is susceptible to natural disasters, the landform before deformation is also represented on the basis of the comparative interpretation of aerial photographs taken in 1968, 1982 and 1986.

5-2 Ground Elevation

In the lowland area the ground elevation points are represented by minor order leveling. On the basis of those leveling points, the spot heights and microrelief lines measured by photogrammetry are also represented.

5-3 Organization and Facilities

The organization and facilities are represented on the basis of the features shown on the 1:10,000 contoured maps and the data provided by BCGS and other agencies. Field survey was also conducted by BCGS and JICA.

6. Criteria for Representation on the Land Condition Map

6-1 Landform Classification

- (1) The minimum size for the representation of landform classification is generally 2mm x 2mm on the maps and that for the linear symbols is about 5mm on the maps.
- (2) The boundaries of the areas where the landform classification not clearly defined are delineated by broken lines.
- (3) The bars, tidal flats and bathymetric lines in marine areas are represented on the basis of the data provided by BCGS.

2. Utilization of Land Condition Map

This land condition map is prepared using the 1:10,000 contoured maps as the base on which the landform classification, ground elevation, organizations and facilities are printed in 12 colors.

It is possible to find out the following areas by reading the land condition map:

- 2-1 Areas affected by flood or high tide such as low or marshy land.
- 2-2 Areas where earthquake damage is expected due to unfavourable conditions of the surface layer.
- 2-3 Areas where ground subsidence is likely to take place such as coastal plain, delta and flood plain areas.
- 2-4 Artificially deformed land and unstable slopes in mountainous or hilly areas where disasters are expected.
- 2-5 Plateaus and gentle hilly areas being comparatively safe from flood or landslide damage, etc.

Therefore, the land condition map can provide basic information not only for disaster prevention but also for land development, and can be utilized more effectively together with the land use map.

3. Outline of Landform

The classes of landforms in the survey area are generally located as follows:

- 3-1 Coastal Plain
Coastal plain with elevation of less than 3m extending north to south along Manila Bay.
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The hills and plateaus, where Quezon City Mandaluyong and Makati are located, extending north to south on the eastern side of the coastal plain. Elevations of the hills and plateaus around Pasig River are 20m ~ 30m and gradually increase northward to 80m ~ 100m.
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Around the Marikina River and Laguna de Bay, the flat lowland with an elevation of 1m ~ 10m covers wide area of floodplain.
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The mountain area has an elevation of 200m ~ 300m. The western side of the mountain area which is hilly, has an elevation of 50m ~ 100m. In the mountains where top flats still remain, gentle slopes are generally prevailing although there are steep slopes along the river valleys.

1. Background

To cope with many urban problems prevailing in the National Capital Region, the Philippine Government requested the Japanese Government in March 1981 for technical cooperation in the preparation of urban base maps, which represent the existing conditions of the Region in detail, as basic materials for the implementation of various public works as well as the establishment of diverse plans concerning disaster prevention, land use, urban redevelopment, etc.

In response to the request for technical cooperation, the Japanese Government sent preliminary survey teams to Manila in January through March 1985 for discussions with the authorities concerned in the Philippine Government and for field survey and data collection in the Region. The Japanese Government consequently agreed on a 1-year technical cooperation program starting in 1985.

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photogrammetry are represented by vertical and slant lettering, respectively. The values of both points are shown in meters, to the first decimal place.

(2) The microrelief lines are represented at 1m intervals.

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- (1) The river and coastal structures constructed across rivers of more than 4m in width or those with more than 50m in length are represented.
- (2) Regarding transportation, main roads of more than 1km in length are represented.
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- (5) The organization and facilities other than the above, are represented according to the criteria for the 1:10,000 contoured maps.

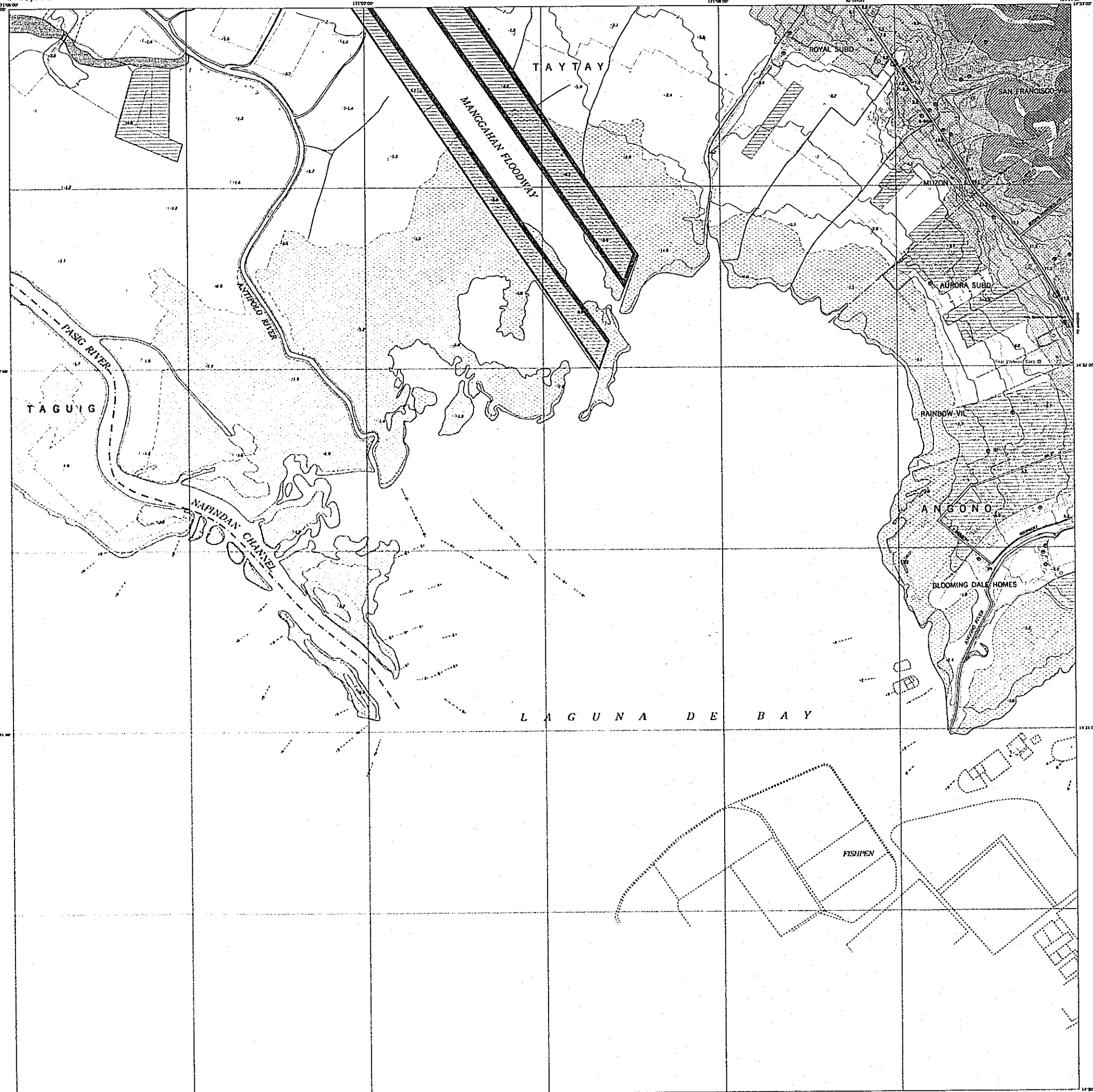
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Printing was conducted with 12 color separation plates (brown, violet, green, yellow, orange, light green, blue, sky blue, silver gray, red, black, dark gray) and their combinations to make the various land conditions easily identifiable.

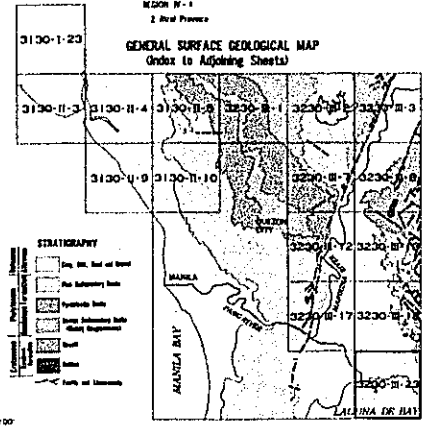
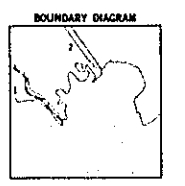
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Landform in Marine Area:	Silver gray
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Boundary Line, Unstable Slope (Cliff):	Violet
Base Map:	Dark gray

7. Definition of Selected Technical Terms.

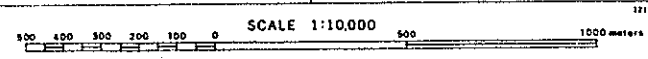
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- 14) Microrelief Line ... Lines depicting detailed landform elevation in lowland.
- 15) Bathymetric Line ... Lines connecting points at equal depth in the sea area.



1. LANDFORM CLASSIFICATION	
MOUNTAIN LANDFORM	<ul style="list-style-type: none"> Top Flat and Ridge Flat Steep Slope (Less Than About 30°) Steep Slope (More Than About 30°) Chick Line
PERIPHERAL LANDFORM	<ul style="list-style-type: none"> Table Colinial Slope Small Alluvial Fan
HILL AND PLATEAU	<ul style="list-style-type: none"> Top Flat Gentle Slope (Less Than About 5°) Moderate Slope (Between About 5° and 30°) Steep Slope (More Than About 30°) Valley Flat
TERRACE	<ul style="list-style-type: none"> Low Terrace Lower Terrace Deer and Shadow Valley
ALLUVIAL FAN	<ul style="list-style-type: none"> General Surface of Alluvial Fan Former River Bed
FLOOD PLAIN AND VALLEY PLAIN	<ul style="list-style-type: none"> Natural Level Backmarsh Swamp and Marsh Dry River Bed
COASTAL PLAIN AND DELTA	<ul style="list-style-type: none"> Former River Bed Natural Level Upper Sand Bar Lower Sand Bar Backmarsh
UNSTABLE SLOPE	<ul style="list-style-type: none"> Cliff Landslide Scar Cliff and Rolled Surface Banked Up Surface Cliff Slope
ARTIFICIALLY DEFORMED LAND	<ul style="list-style-type: none"> Banked Up Slope Filled Up Surface Under Construction Area
OTHERS	<ul style="list-style-type: none"> Main Watershed Drainage Water Surface Landform Boundary Indistinct Landform Boundary Bar Tidal Flat Barthometric Line
MAJOR AREA	
2. GROUND ELEVATION	
BOUNDARY POINT	<ul style="list-style-type: none"> Beach Mark Ground Elevation Point
BOUNDARY LINE	<ul style="list-style-type: none"> Microrelief Line Contour Line
3. ORGANIZATION AND PUBLIC FACILITIES	
ADMINISTRATIVE BOUNDARY	<ul style="list-style-type: none"> Regional Boundary Provincial Boundary City and Municipal Boundary
TRANSPORTATION	<ul style="list-style-type: none"> Main Road Roadway Rail Terminal Government Building Police Station Fire Station Hospital Health Center Church School Reserve Center
MAJOR AND OTHER FACILITIES FOR RESCUE AND RELIEF	<ul style="list-style-type: none"> Embankment Dam Wharf Revetment Bridge Breakwater, RTTY and Carroway Flood Gate Drainage Station Wharf and Pier Lighthouse Port and Harbor Fishery Port Pipe Line and Cable on Sea Bottom Fish Pen Stock Anchorage Stranded Wreck Marine Piling and Salt Bed Restricted Area Dumping Area
MAJOR AND OTHER FACILITIES IN COASTAL AREA	
MAJOR AND OTHER FACILITIES IN RIVER AND COASTAL STRUCTURE	
MAJOR AND OTHER FACILITIES IN OTHERS	
MAJOR AND OTHER FACILITIES IN OBSERVATORY	<ul style="list-style-type: none"> Water Level Gauge Station Rain Gauge Station Earthquake Observatory
MAJOR AND OTHER FACILITIES IN POWER PLANT AND SUB-STATION	<ul style="list-style-type: none"> Power Plant and Sub-Station Water Treatment Plant Wear Pumping Station Well



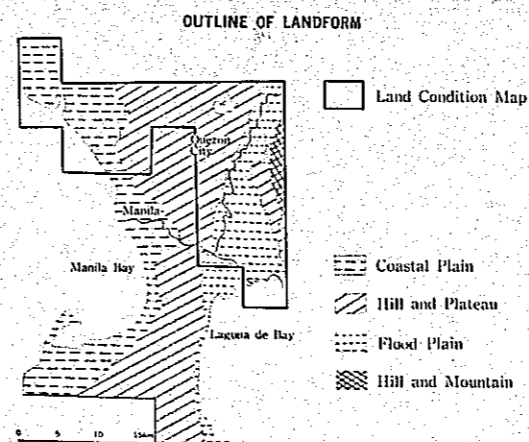
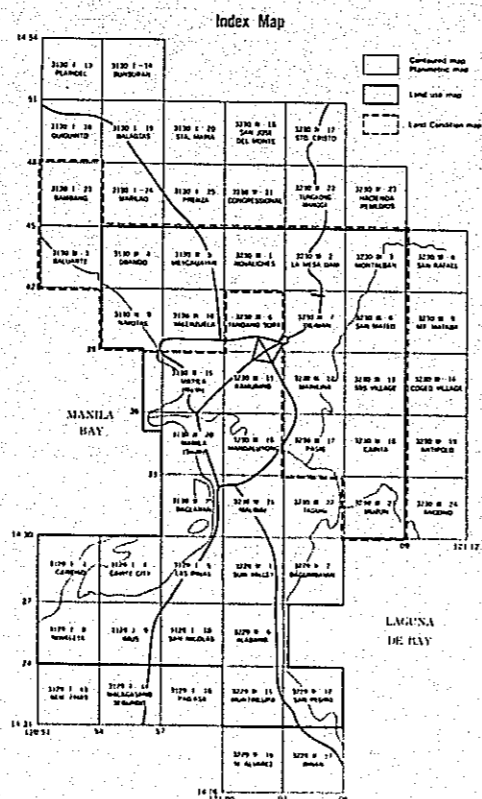
This map was produced under a cooperative undertaking between the Government of the Republic of the Philippines and the



METRO MANILA LAND CONDITION MAP
SCALE 1 : 10,000

**INFORMATION AND USAGE OF
THE LAND CONDITION MAP**

REPUBLIC OF THE PHILIPPINES



1. Components of the Land Condition Map

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- Organization and Facilities

These categories are then divided into 91 sub-classifications.

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As for the landform classification, various types of landform are classified into mountain, hill and plateau, lowland (flood plain, delta and others), etc. according to the form, formative processes and surface materials. In the detailed classification, the safety or susceptibility to disasters is also taken into account.

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In the lowland area the ground elevation points and microrelief lines are shown in order to clarify its susceptibility to flooding and high tides.

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5-1 Landform Classification

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The classes of landforms in the survey area are generally located as follows:

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(1) The minor order leveling points and the spot heights measured by photogrammetry are represented by vertical and slant lettering, respectively. The values of both points are shown in meters, to the first decimal place.

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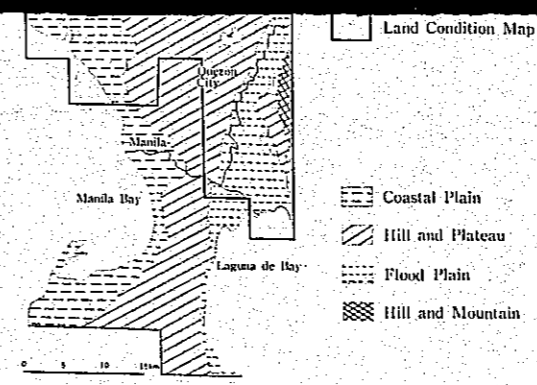
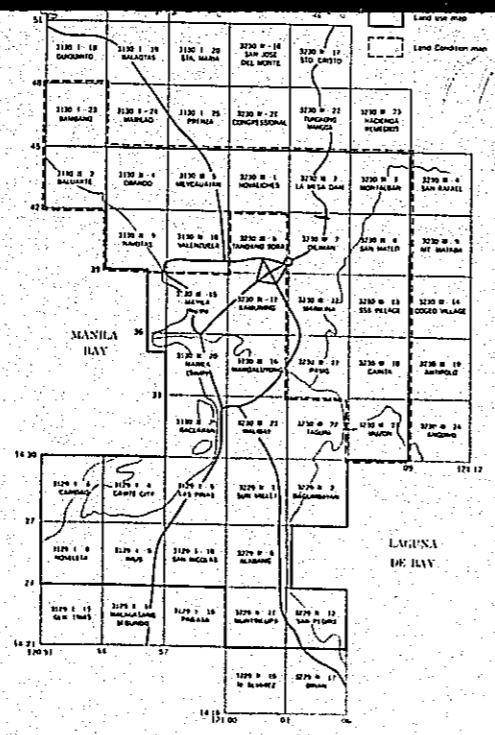
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(see Index Map)

1-2 The contoured map was completed in 1987. The aerial photographs taken in 1982 were used for field identification and stereo plotting. As for the major changes after aerial photography, the results of field completion conducted in 1986 and the interpretation of the aerial photographs taken in the same year were interpreted.

1-3 The planimetric map was completed in 1987 by the combination of color separation plates of the contoured map.

1-4 The land use map was completed in 1989 using the contoured map as the base and integrating mainly the interpretation of the aerial photographs taken in 1982 and the results of field identification conducted in 1985.

1-5 The land condition map was completed in 1989 to represent landform classification, ground elevation, organization and facilities using the contoured map as the base. The representation was made mainly on the basis of the interpretation of the aerial photographs taken in 1982 and 1986, the field identification conducted in 1985 and the data provided by the agencies concerned in the Philippines.

respectively. The values of both points are shown in meters, to the first decimal place.

(2) The microrelief lines are represented at 1m intervals.

6-3 Organization and Facilities

- (1) The river and coastal structures constructed across rivers of more than 1m in width or those with more than 50m in length are represented.
- (2) Regarding transportation, main roads of more than 1km in length are represented.
- (3) For facilities in coastal area, the ports, harbors and fishery ports are represented, and their symbol sizes vary according to their scale.
- (4) The facilities for rescue and relief, facilities for dangerous materials, observatory, facilities for supply and processing are represented without exception.
- (5) The organization and facilities other than the above are represented according to the criteria for the 1:10,000 contoured maps.

6-4 Color Scheme

Printing was conducted with 12 color separation plates (brown, violet, green, yellow, orange, light green, blue, sky blue, silver gray, red, black, dark gray) and their combinations to make the various land conditions easily identifiable.

Mountain:	Brown
Piedmont Landform:	Yellow
Hill and Plateau, Terrace:	Orange-brown
Flood Plain and Valley Plain:	Light green
Coastal Plain and Delta:	Blue-green
Artificially Deformed Land, Unstable Slope (Landslide Scar):	Red
Landform in Marine Area:	Silver gray
Water Surface:	Sky blue
Microrelief Line:	Brown
Organization and Facilities:	Black, Red
Ground Elevation, Annotation:	Black
Boundary Line, Unstable Slope (Cliff):	Violet
Base Map:	Dark gray

7. Definition of Selected Technical Terms

- 1) Knick Line ... Lines passing points on slopes of mountain-sides, which divide upper gentle slopes and lower steep slopes.
- 2) Talus ... Relatively steep depositional surfaces formed at lower parts of mountain-slopes by rain wash or land slide and consisting of larger grains of debris.
- 3) Colluvial Slope ... Depositional landforms with relatively gentle slopes, formed by debris and weathered material transported and sedimented by effects of rain wash and soil creep.
- 4) Small Alluvial Fan ... Small depositional landforms with relatively gentle slopes, starting at the end of valleys and fanning into lowland, where the river transportation force diminishes.
- 5) Valley Flat ... Flat surfaces located along river tributaries, where bed rock is partially covered by shallow fluvial deposits.
- 6) Dent and Shallow Valley ... Shallow depressions on the surface of terraces.
- 7) Natural Levee ... Strip microrelief located along or around rivers which is composed of sand and silt deposits made during floods.
- 8) Backmarsh ... Lowland relatively free from alluviation of rivers and poorly drained because of location behind natural levees and others.
- 9) Upper Sand Bar ... Microrelief located along the former and present coast, composed of sand and gravel, and formed by sedimentation and action of ocean waves and coastal currents.
- 10) Landslide Scar ... Vestiges of radical sliding of large masses of earth down slopes or cliffs.
- 11) Filled Up Surface ... Artificial land formed by filling marshes, lakes or river beds to the level of the surrounding surfaces.
- 12) Main Watershed ... Main ridges of mountains and hills including those of several drainage basins which collect to a common basin.
- 13) Tidal Flat ... Shallow water areas with mud beds which are exposed at low tide.
- 14) Microrelief Line ... Lines depicting detailed landform elevation in lowland.
- 15) Bathymetric Line ... Lines connecting points at equal depth in the sea area.

