

A7. ORGANIZATION AND INSTITUTION

A7.1 Existing Organizational Setup

Major portion of the Limboto-Bolango-Bone (LBB) basin is located in Kota Gorontalo and Kabupaten Gorontalo of Gorontalo Province, and small portion of the upstream basin of the Bone River in Kabupaten Bolaang Mongondow of North Sulawesi Province.

Gorontalo became an independent province in the year 2000 by the LAW No. 38/2000, though it was a part of North Sulawesi Province before then. The new province consists of Kabupaten Gorontalo, Kabupaten Boalemo and Kota Gorontalo.

Besides the above changes, there was a change of the government administration to decentralized administration.

Organizational setup of the government agencies and other organizations are introduced in the following sub-sections based on the latest information as of September 2002, unless otherwise mentioned.

(1) Regional Government Administration

Regional governments in Indonesia are established based on the Government Regulation No.84/2000 concerning the Guidance for Regional Institutional Organization. In the Regulation, the government institutions are defined as follows:

- 1) **Central Government** is the unitary State institution which consists of President and the Ministers;
- 2) **Regional Government** is the Head of regional area and autonomous regional institutions as executive board;
- 3) **Heads of Regional Area** are Governor in Province, Bupati in Kabupaten and Walikota in the Kota (Municipality);
- 4) **Regional Institutions** are organization/institution of Regional Government which are responsible to the Head of Regional Area and assist the Head in the implementation of administration. The Institution consists of Regional Secretariat, Regional Institutional Services (Dinas) and Regional Technical Institutions, Kecamatan and Kelurahan;
- 5) **Regional Secretariat** is the element of Regional Administration;

- 6) **Dinas** is the implementation element of the Regional Government;
- 7) **Boards/Offices** are Regional Technical Institutions which function for coordination and formulation of implementation policy and community services;
- 8) **Kecamatan** is working Area of Camat as Institution of Kabupaten/Kota;
- 9) **Kelurahan** is working Area of Lurah as Institution of Kabupaten and/or under Kabupaten.

(2) Authority of Central Government

Ministry of Settlement and Regional Infrastructure (MSRI or KIMPRASWIL) is the authority in public work sector. The Institution was established by President Decree No. 102/2001 dated 13 September 2001 with other ministries as listed below.

- 1) Ministry of Home Affairs
- 2) Ministry of Foreign Affairs
- 3) Ministry of Defense
- 4) Ministry of Judicial Affair and Human Right
- 5) Ministry of Finance
- 6) Ministry of Energy and Mineral Resources
- 7) Ministry of Industry and Commerce
- 8) Ministry of Agriculture
- 9) Ministry of Forestry
- 10) Ministry of Marine and Fishery
- 11) Ministry of Communication
- 12) Ministry of Settlement and Regional Infrastructure
- 13) Ministry of Healthy
- 14) Ministry of National Education
- 15) Ministry of Religion
- 16) Ministry of Labor and Transmigration
- 17) Ministry of Social

KIMPRASWIL handles spatial management, regional infrastructure (urban and rural) housing and settlement and water resources. The water resources are administrated in the Directorate General of Water Resources (DGWR) of KIMPRASWIL.

According to KIMPRASWIL Decree No. 01/KPTS/M/2001, DGWR has the task to formulate and carry out formulation of policies and technical standardization in the water resources sector. In carrying out the job, DGWR has functions of:

- 1) Formulation the policy of Ministry in the water resources sector
- 2) To carry out the policy in the water resources sector appropriate with the effective regulation
- 3) Formulation of standard, norm, guidance, criteria and procedure in the water resources sector.
- 4) Giving technical guidance and evaluation

DGWR consists of:

- 1) Secretariat of Directorate General
- 2) Directorate of Technical Guidance
- 3) Directorate of Water Resources Conservation Management
- 4) Directorate of Water Resources West Region
- 5) Directorate of Water Resources Central Region
- 6) Directorate of Water Resources East Region.

The Organizational structures of KIMPRASWIL and DGWR are shown in Figures A7.1.1 and A7.1.2.

(3) Administrative Features of Gorontalo Province

The Province of Gorontalo has a total area of 12,215.45 km², consisting of Municipality of Gorontalo 65 km², Kabupaten of Gorontalo 5,411 km² and Kabupaten of Boalemo 6,739 km² (See Table A7.1.1). Gorontalo province was established by the LAW No. 38/2000 and formerly Gorontalo was a part of North Sulawesi Province.

Under the Kabupaten and Municipality there are Kecamatans. In Kabupaten of Gorontalo there are 13 Kecamatans. They are Kecamatans of Batudaa, Tibawa, Boliyohuto, Limboto, Telaga, Tapa, Kabila and Suwawa which are located in the Study Area and Kecamatans of Batudaa Pantai, Sumalata, Kwandang, Atinggola and Bone Pantai are not include in the Study Area. Municipality of Gorontalo consists of three Kecamatans. They are Kecamatans of Kota Barat, Kota Selatan and Kota Utara, all of which are located in the Study Area. The Kabupaten of Boalemo, consisting of 5

Kecamatans of Popayato, Marisa, Paguat, Tilamuta and Paguyaman, is not included in the Study Area.

The administrative features of Kota and Kabupaten Gorontalo which are located in the Study Area are listed in Tables A7.1.2 and A7.1.3.

The Gorontalo Province has administrative institution which consists of staff element, implementation element (Dinases) and supporting Element. The institutional organization base on the Governor of Gorontalo Province Decree No. 02/2001 is shown in Figure A7.1.3.

(4) Dinas of Gorontalo Province

Implementation institution (Dinas) in Gorontalo Province was established by the Governor Decree No. 02/2001 dated 19 February 2001. The Decree states the establishment of nine dinas established. They are:

- 1) Dinas of Regional Revenue;
- 2) Dinas of Health and Social Welfare;
- 3) Dinas of Education and Sport;
- 4) Dinas of Agriculture, Forestry and Plantation Estate;
- 5) Dinas of Public Work/Settlement and Regional Infrastructure;
- 6) Dinas of Communication, Post Telecommunication Culture and Tourism;
- 7) Dinas of Industry, Trade, Cooperation and Manpower;
- 8) Dinas of Marine and Fishery; and
- 9) Dinas of Mining and Energy.

In the beginning of the year 2002, the Dinas was reorganized and increased to eleven (11) Dinas by Provincial Regulation No. 07/2002 as follows:

- 1) Dinas of Tax and Regional Revenue;
- 2) Dinas of Healthy and Social Welfare;
- 3) Dinas of Education and Culture;
- 4) Dinas of Forestry and Plantation Estate;
- 5) Dinas of Public Works/Settlement and Regional Infrastructure;
- 6) Dinas of Communication, Post Telecommunication and Tourism;
- 7) Dinas of Industrial, Trading and Capital Investment;

- 8) Dinas of Marine and Fishery;
- 9) Dinas of Mining and Energy;
- 10) Dinas of Agriculture and Husbandry; and
- 11) Dinas of Cooperation, Man Power and Transmigration.

Dinas of Public Work/Settlement and Regional Infrastructure (Dinas PU/Kimpraswil) carries out the Water Resources administration.

Water Resources Management Institution: Dinas PU/Kimpraswil (Dinas Pekerjaan Umum/Permukiman dan Prasarana Wilayah), Propinsi Gorontalo has the obligation to implement the decentralization authority and deconcentration in the sector of public works/settlement and regional infrastructure.

Organizational Setup: According to Governor Decree No. 02/2001 the organizational/setup of Dinas PU/Kimpraswil of Gorontalo Province consists of:

- 1) Head Office;
- 2) Administration Division, consisting of (1) Sub-Division of General Affairs, (2) Sub-Division of General Finance, and (3) Sub-Division of Personnel Affairs;
- 3) Sub-Dinas of Program, consisting of (1) Section of Data, Information and Program Arrangement, and (2) Section of Controlling, Evaluation and Reporting;
- 4) Sub-Dinas of Spatial Planning and Controlling, consisting of (1) Section of Space utilization, and (2) Section of Space control;
- 5) Sub-Dinas of Water Resources Development, consisting of (1) Section of Technical Planning and Irrigation, and (2) Section River, Swampy and Coast, Operation and Maintenance;
- 6) Sub-Dinas of Housing Development, consisting of (1) Section of Housing, and (2) Section of Clean Water and Environmental Infrastructure;
- 7) Sub-Dinas of Infrastructure Development, consisting of (1) Section of Road and Bridge Planning, and (2) Section of Road and Bridge Maintenance;
- 8) Technical Implementation Unit of Dinas (UPTD); and
- 9) Groups of Functional Jobs.

The organization of Dinas PU/Kimpraswil of Gorontalo Province was also reorganized by Regional Regulation No. 07/2002 as follows:

- 1) Head Office;
- 2) Administrative Division, consisting of (1) Sub Division of General Affairs, (2) Sub Division of Accounting, (3) Sub Division of Personnel Affairs, and (4) Sub Division of Logistic;
- 3) Sub-Dinas Program, consisting of (1) Section of Survey and Data, (2) Section of Program Arrangement and, (3) Section of Evaluation and Control;
- 4) Section of Water Resources Development, consisting of (1) Section Planning and Design, (2) Section of Irrigation and O&M, (3) Section of River, Swamp, Coastal and Lake;
- 5) Sub-Dinas of Road Infrastructure Development, consisting of (1) Section of Planning and Design, (2) Section of Road Management, and (3) Section of Bridge Management; and
- 6) Sub-Dinas of Spatial Planning and Settlement, consisting of (1) Section of Spatial Planning, (2) Section of Housing, (3) Section of Clean Water and Environment Infrastructure.

The Organization setup of Dinas PU/Kimpraswil, Gorontalo Province is shown in Figure A7.1.4. Sub-Dinas of Water Resources Development carries out water resources matter.

(5) Project Office

Flood Control and Coastal Protection Project Gorontalo Province: Flood Control and Coastal Protection Project (Proyek Pengendalian Banjir dan Pengamanan Pantai Provinsi Gorontalo Tahun Anggaran 2002) of Gorontalo Province has obligation to manage and to carry out a part of jobs of Ministry of Kimpraswil in performing development in water resources sector, especially flood control and coastal protection in Gorontalo Province. The project is under the guidance and responsibility of Directorate General of Water Resources Management and, in the implementation, is supervised and guided by Director of Water Resources East Region, and moreover is under coordination of the Head of Dinas PU/Kimpraswil Gorontalo Province. The project is financed by Central Budget (APBN).

The organization scheme and work order of the project was established by Head of PU/Kimpraswil Gorontalo Province with Ministerial Decree No. 900/KPTS/366/2002 dated 27 March 2002. The organization scheme of the project is shown in Figure A7.1.5

Flood Control Project Region I Dinas PU/Kimpraswil Gorontalo Province: Flood Control Region I Dinas PU/Kimpraswil Gorontalo Province (Proyek Penanggulangan Banjir Wilayah I (PPBWI) Dinas PU/Kimpraswil Provinsi Gorontalo Tahun Anggaran 2002) has obligation to assist Provincial Administration of Gorontalo to carry out:

- 1) Flood control to secure the settlement, agriculture, commercial, government and public facilities in Gorontalo Province from flooding; and
- 2) Operation and maintenance of river.

The project is under the guidance and responsibilities of Governor of Gorontalo Province through Head of Dinas PU/Kimpraswil Gorontalo Province. The project budget is borne by Gorontalo Province (APBD Province). The organization scheme of the PPBWI shown in Figure A7.1.6

(6) Water Resources Management in Kota Gorontalo

Institution: Management of water resources matter in the Kota Gorontalo is done by Dinas Pekerjaan Umum Kota Gorontalo (Dinas PU: Public Works of Gorontalo City). The Dinas PU Kota Gorontalo is an administrative implementation element in the sector of public works established by Kota Gorontalo Regional Decree No. 19/2000 and Walikota Gorontalo Decree No. 82/2001. The Dinas has an obligation to implement the authority of city autonomy in the framework of decentralization job, especially in the sector of public works.

Organizational Setup: The organization of Dinas PU Kota Gorontalo consists of:

- 1) Head of Office;
- 2) Administration Division, consisting of (1) Sub-Division of Program Arrangement and Control, (2) Sub-Division of Personal Affairs, and (3) Sub-division of Finance and General Affairs;
- 3) Sub-Dinas of Water Resources, consisting of (1) Section of Development and Maintenance, and (2) Section of Utilization Building;
- 4) Sub-Dinas of Bina Marga, consisting of (1) Section Road and Bridge Development, and (2) Section of Maintenance and Control;
- 5) Sub-Dinas of Cipta Karya, consisting of (1) Section of Building, and (2) Section of Environmental Sanitation; and
- 6) Groups of Functional job.

The organization of Dinas PU Kota Gorontalo is shown in Figure A7.1.7.

Sub-Dinas of Water Resources: As to the management of water resources matter in gorontalo city, Sub-Dinas Pengairan (Sub-Dinas of Water Resources) has the obligation to implement the part of Dinas obligation in the sector of water resources. For the time being the irrigation operation & maintenance in Kota Gorontalo are still implemented by Sub-Dinas Pengembangan Sumber Daya Air Province of Gorontalo, and the activities of flood control are implemented by Proyek Pengelolaan Sumber Air dan Pengendalian Banjir – PSAPB (Water Resources Management and Flood Control Project of North Sulawesi), though some part are implemented by Gorontalo City by using local budget.

Flood Control Project in Kota Gorontalo: In Kota Gorontalo, there are two projects for flood control activity as follows:

- 1) Proyek Perbaikan Tebing dan Pembuatan Cekdam (River Bank Improvement and Check dam Construction Project), funded by General Allocation Fund in The Dinas PU Gorontalo City.
- 2) Proyek Tanggap Darurat Bencana Alam Kota Gorontalo (Natural Disaster Mitigation Project), funded by Additional Budget for disaster mitigation.

The both projects are implemented by the same staff as follows:

- Project Manager : Chief of Technical Section of Public Work of Gorontalo City
- Technical Staff : Staff of Technical Section
- Administration Staff : Staff of Administration Section

(7) Water Resources Management in Kabupaten of Gorontalo

Institution: The Water Management in Kabupaten Gorontalo was formerly done by the Public Work of North Sulawesi through Branch Office of Public Work in Gorontalo. The main job of the Branch office was operation and maintenance of irrigation network in Kabupaten Gorontalo.

The organization and work arrangement of Dinas in Kabupaten Gorontalo are established by Regional Regulation of Kabupaten Gorontalo No. 43/2000. The water resources management in Kabupaten Gorontalo is carried out by Dinas Pekerjaan Umum dan Prasarana Wilayah Kabupaten of Gorontalo (Dinas PU-Praswil: Public Works and Regional Infrastructure). For the implementation, Regional Regulation was issued as Bupati Gorontalo Decree No. 721/2000. The Decision states that the Dinas has an obligation of implementation as a regional autonomous authority in the sector of public work and regional infrastructure.

Organizational Setup: The organization of Dinas Pekerjaan Umum dan Prasarana Wilayah Kabupaten Gorontalo consists of:

- 1) Kepala Dinas (Head Office);
- 2) Bagian Tata Usaha (Administration Division);
- 3) Sub-Dinas Perencanaan, Jasa dan Konstruksi (Sub-Dinas of Planning, Service and Construction);
- 4) Sub-Dinas Pengairan dan Pedesaan (Sub-Dinas of Water Resources and Rural);
- 5) Sub-Dinas Sarana dan Prasarana (Sub-Dinas of means and infrastructure);
- 6) Cabang Dinas (Branch Office);
- 7) Unit Pelaksana Teknis Dinas (Technical Implementation Unit); and
- 8) Kelompok Jabatan Functional (Functional Job Groups).

The organizational setup is shown in Figure A7.1.8. The institution of Kabupaten Gorontalo is still in the transition condition, and the matters of water management such as irrigation operation maintenance are still being implemented by Sub-Dinas Pengembangan Sumber Daya Air of Gorontalo Province.

Flood Control Project in Kabupaten Gorontalo: In the fiscal year of 2002 through Bupati Gorontalo Decree No. 40/2002 in Kabupaten Gorontalo, flood control project were established by the name Proyek Normalisasi Sungai Kabupaten Gorontalo (River Normalization Project Kabupaten Gorontalo), and the project was funded by Region Budget of Kabupaten. The organization scheme of the project is shown in Figure A7.1.9.

(8) Water Resources Management in North Sulawesi Province

Dinas of North Sulawesi Province: The organization of Dinas in the North Sulawesi Province was established by North Sulawesi Regional Regulation (Peraturan Daerah) No. 10/2000. The organization of Provincial Dinas consists of:

- 1) Dinas of Agricultural and animal husbandry;
- 2) Dinas of Fishery and Marine;
- 3) Dinas of Mining and Energy;
- 4) Dinas of Forestry;
- 5) Dinas of Plantation Estate;
- 6) Dinas of Industry and Trade;
- 7) Dinas of Cooperation, Small and Medium entrepreneur;
- 8) Dinas of Tourism;
- 9) Dinas of Man Power;
- 10) Dinas of Healthy;
- 11) Dinas of Education and Culture;
- 12) Dinas of Bina Marga;
- 13) Dinas of Pengairan (Water Resources Development);
- 14) Dinas of Communication;
- 15) Dinas of Transmigration;
- 16) Dinas of Telecommunication; and
- 17) Dinas of Tax and Revenue.

The institution related with water resources is Dinas Pengairan (Dinas of Water Resources Development). By the Governor Decree (2001), the name of Dinas Pengairan was changed to Dinas Sumber Daya Air (Dinas SDA: Water Resources Development).

Organizational Setup: The organization of Dinas SDA, Province of North Sulawesi consists of:

- 1) Kepala Dinas (Head Office),
- 2) Wakil Kepala Dinas (Vice Head Office),
- 3) Bagian Tata Usaha (Administration Division),
- 4) Sub-Dinas,
- 5) Unit Pelaksanaan Teknis Dinas (Technical Implementation Unit),

- 6) Sub-Bagian dan Seksi (Sub-Divisions and Sections), and
- 7) Kelompok Jabatan Fungsional.

There are four Sub-Dinas as follows:

- 1) Sub-Dinas Perencanaan Teknis (Sub Dinas of Planning), consisting of (1) Seksi Perencanaan Irigasi (Section of Irrigation Planning); (2) Seksi Perencanaan Sungai, Rawa dan Pantai (Section of River, Swampy and Coastal Planning); and 3) Seksi Bina Manfaat dan Pelaporan (Section of Water Use and Reporting).
- 2) Sub-Dinas Irigasi (Sub Dinas of Irrigation), consisting of (1) Seksi Pembangunan Irigasi (Section of Irrigation Development), (2) Seksi Rehabilitasi dan Peningkatan Irigasi (Section of Rehabilitation and improvement of irrigation), and (3) Seksi Pengendalian dan Evaluasi (Section of Evaluation and control).
- 3) Sub-Dinas Sungai, Rawa dan Pantai (The Sub Dinas of River Swampy and Coastal), consisting of (1) Seksi Sungai (Section of River), (2) Seksi Rawa dan Pantai (Section of Swampy and Coastal), and (3) Seksi Pengendalian dan Evaluasi (Section of Evaluation and Control).
- 4) Sub-Dinas Operasi, Pemeliharaan dan Pengendalian (The Sub Dinas of Operation, Maintenance and Control), consisting of (1) Seksi Operasi (Operation Section), (2) Seksi Pemeliharaan (Maintenance Section), and (3) Seksi Pengendalian (Control Section).

The organizational setup of Dinas Sumber Daya Air, Propinsi Sulawesi Utara is shown in Figure A7.1.10.

Proyek Pengelolaan Sumber Daya Air dan Pengelolaan Banjir (PSAPB): By the Government Regulation No. 14/1987, a part of public work matter was turned over to the regional government Level-I and Level-II. Matters turned over from the central government to the regional government are only irrigation especially for operation and maintenance. The other matters such as flood control are implemented by the central government.

For the implementation of flood control in North Sulawesi Province (including Gorontalo), an institution has been established for flood control project with the name Proyek Pengelolaan Sumber Daya Air dan Penanggulangan Banjir (PSAPB: Water

Resources Management and Flood Control Project). The objectives of the Project PSAPB are:

- 1) To increase the capability of water resources in order to increase water supply for several use as community, agriculture, tourism, electricity and other;
- 2) Implementation of flood control and to protect area from the hazard due to the flood; and
- 3) To increase efficiency and productivity of water use.

In order to attain the objectives mention above, the project has main jobs:

- 1) To carry out survey, study and design supporting the increase of water resources potential;
- 2) To construct flood mitigation facilities; and
- 3) To carry out the operation and maintenance activities of the constructed facilities before turning over to the related institution.

(9) Coordination Bodies in Water Resources Sector

Panitia Tata Pengaturan Air (PTPA): At the provincial level, water and water resources management must be coordinated with other sectors. Coordination is carried out by Governor, establishing Panitia Tata Pengaturan Air (PTPA: Province Water Resources Management Committee) in the sector of water resources.

PTPA is a conference forum for implementation of the coordination in water and water resources management at the provincial level. PTPA has jobs of:

- 1) Collecting processing and preparing material from related agency, needed for deciding Provincial Policy for coordination in water resources sector cover (1) data of availability and quality of water resources; (2) data of water resources conservation; and (3) data of water and water resources use, etc.
- 2) Give suggestion to Governor about (1) water allocation for various uses and sectors; (2) water pollution in water resources; and (3) flood control, sand mining, etc.
- 3) To supervise about coordination matter.
- 4) Making report to Governor.

For implementation of those jobs, PTPA has function to assist the Governor:

- 1) To decide using water and water resources,
- 2) To decide the priority in water and water resources use in conservation plan, development and water use,
- 3) Arrangement using water and water resources,
- 4) Arrangement using water pollution disposal, and
- 5) Arrangement structure development in water resources area.

Since Gorontalo is a new province, the PTPA is not yet established, while in North Sulawesi Province PTPA was established by the Governor North Sulawesi Decree No. 85/2001.

The organization of PTPA consists of:

- 1) Chairman: Vice Governor of North Sulawesi;
- 2) Vice Chairman I: Head of Provincial Bappeda;
- 3) Vice Chairman II: Head of Water Resources Service North Sulawesi;
- 4) Secretary: Vice Head of Water Resources Service North Sulawesi;
- 5) Vice Secretary: Head of Infrastructure Planning;
- 6) Members: Regional Bappelitbang; and
- 7) Member: (1) Ass. Economic and Development, (2) Head of Industrial and Trading Service, (3) Head of Agriculture and Animal Husbandry, (4) Head of Forestry Agency, (5) Head of Plantation Crop, (6) Head of Marine and Fishery Service, (7) Head of Tourism Service, (8) Head of Healthy Service, (9) Head of Mining & Energy Service, (10) Head of Settlement Infrastructure, (11) Head of Bappedal, (12) Head of Land Affair, (13) Director of PLN, (14) Head of Law Biro, (15) Manager of PDAM, (16) Indonesian Farmer Association in Manado (HKTI), (17) Head of Trade Chamber, (18) NGO in North Sulawesi, (19) University of Sam Ratulangi, and (20) University in Tondano.

Panitia Pelaksana Tata Pengaturan Air (PPTPA): Coordination in the river basin level can be implemented through Panitia Pelaksana Tata Pengaturan Air (PPTPA: River Basin Water Resources Management Committee). PPTPA can be established by Governor with functions:

- 1) To respond to the development demand for water supply in respective river basin, and
- 2) To assist the PTPA in the river basin concern.

In North Sulawesi Province PPTPA has been set up in two river basin. The Limboto-Bolango-Bone River basin is one of them. The PPTPA was established by the Governor of North Sulawesi. Since there is no PTPA in Gorontalo Province, the PPTPA of North Sulawesi Province can function as PTPA of Gorontalo Province.

Water Users Association (WUA): Water Users association in Gorontalo named as Persatuan Petani Pengelola Air (P3A) is the farmers' organization which manages irrigation water at a tertiary irrigation network or irrigation network at farmer level. The P3A has function to optimize the use of irrigation water available at tertiary level system for the benefit of the farmers. The function of P3A are:

- 1) To manage water and irrigation network at tertiary portion in order can be utilized by the member optimally;
- 2) To construct, maintenance tertiary network to keep the performance of the structure;
- 3) To decide and regulate contribution from the members as money, crop yield or labor force for empowering irrigation water and maintenance of tertiary network; and
- 4) To guide and to supervise the member in order to obey all regulation concerning water use which establish by central and local government and association.

The organization of Water User Association shown in Figure A7.1.11 The organization of P3A consists of:

- 1) Chairman and Vice Chairman,
- 2) Secretary,
- 3) Irrigation technician,
- 4) Chairman of tertiary block, and
- 5) Members.

Kabupaten/Kota Irrigation Committee: Kabupaten/Kota Irrigation Committee in North Sulawesi Province was established by Governor Decree No. 228/1987.

The organization of Kabupaten/Kota Irrigation Committee constitutes:

- 1) Chairman/Member: Bupati/Walikota
- 2) Secretary/member: Head of Public Works/Water Resources Service
- 3) Members: Head of Village Development Office, Head of Agriculture Office, Head of Fishery Office, Head of Forestry Agency, Chief of Police, and Head of Land Affairs Service.

Job of the irrigation committee is to assist the Governor in allocation of irrigation water for cropping and other. The committee has functions for:

- 1) Coordination using water effectively and the priority,
- 2) Coordination in crop planning,
- 3) Coordination in safe and maintenance of irrigation network,
- 4) Inventory of network and water resources,
- 5) Establishment of P3A,
- 6) Suggestion in financing the operation & maintenance, and
- 7) Coordination with other related institution.

Provincial Irrigation Committee: The irrigation committee in North Sulawesi Province was established by Governor Decree No. 157/1989. The function of Provincial Irrigation Committee are:

- 1) To assist the Governor in allocation, deciding and giving water for agricultural need and other;
- 2) To guide Kabupaten Irrigation Committee;
- 3) To solve problem which can not be solved by Kabupaten Irrigation Committee; and
- 4) To coordinate with Kabupaten Irrigation Committee periodically and make evaluation.

The organization of the Provincial Irrigation Committee constitutes:

- 1) Chairman/Member: Governor
- 2) Vice Chairman I/Member: Chief of Bappeda
- 3) Vice Chairman II/Member: Ass. II Regional Secretary
- 4) Vice Chairman III/Member: Head of Public Work Office

- 5) Secretary/Member: Head of Sub Dinas Pengairan
- 6) Member: Deputy Governor Regional I/II, Head of Land Affair Service, Head of Agriculture, Head of Fishery Office, Head of Plantation Estate Office, Head of Rural Development, Head of Police, Head of Biro Regional Production, and Head of Forestry Agency.

Tim Koordinasi Pengendalian Sumber Daya Air. At the central level, the management of water resources is coordinated Tim Koordinasi Pengendalian Sumber Daya Air (Water Resources Management Coordination Team) which was established by President Decree No. 123 dated 5 December 2001. The Team is a non-structural coordination institution which is under and responsible to the President. The Coordination Team has jobs to formulate the national policy of water resources and the policies necessary for the sector of water resources. For implementation those jobs, the Team has following function:

- 1) Coordination in formulating water resources management policy as conservation, utilization, energy and control disaster due to water.
- 2) Internal and external consultation with government and non-government side in the frame of integrating of policy and to prevent the inter-sector and inter-regional conflict in utilizing water resources.
- 3) Consideration to the president in the water resources management.
- 4) Monitoring and evaluation the implementation water resources management policy.

The Coordination Team consists of:

- 1) Chairman: Coordinator Minister of Economic Sector
- 2) Vice Chairman: State Minister of National Development Planning / Head of Bappenas.
- 3) Executive Director: Minister of Settlement and Regional Infrastructure (MSRI)
- 4) Secretary I: The Deputy of Production Corners and Infrastructure Sector of Bappenas.
- 5) Secretary II: Director General of Water Resources Management of MSRI
- 6) Members: (1) Minister of Home Affairs, (2) Minister of Agriculture, (3) Minister of Forestry, (4) Minister of Communication, (5) Minister of Energy and Mineral Resources, (6) Minister of Marine and Fishery, (7) Minister of

Healthy, (8) Minister of Industry and Commerce, and (9) State Minister of Life Environment / Chairman of Bapedal.

According to the President Decree No. 123/2001, Governor may establish Water Resources Management Coordination at province level and Bupati/Walikota may establish water resources management coordination at Kabupaten/Kota level. The works of the coordination teams at regional level are characterized as coordination and consultation.

Kemitraan Air Indonesia (KAI: Indonesian Water Relationship): KAI was established on 21 March 2002 in Jakarta by Forum Air Indonesia II. KAI is a network of inter-organizations as public sector entrepreneurship, and general society to support integrated water resources management. The secretariat of KAI which has function to facilitate the activity of KAI was formed by an appointed committee. Members of KAI are as follows:

- 1) Coverage: DR. Ir. Soejono Sosrodarsono; DR. Ir. Sunarno; Ir. Kusdaryono; Ir. Mardjono Notodihardjo, Dipl.HE; Ir. Achmandi Partowijoto, Cert.A.E; Dr. Ir. Kunsatwanto Impasihardjo; and Dr. Ir. Suyono Dikun, MSc.
- 2) Secretary: Ir. M. Napitupulu, Dipl.HE
Vice Secretary: Dr. Ir. Roestam Sarief, MNRM; Dr. Ir. Effendi Pasandaran; and Ir. Hendra Setiawan.
- 3) Institution Order: Dr. Ir. Sutardi; Ir. A. Tommy Sitompul, MEng; and Drs, Usman Gunadi.
- 4) Treasure: Ir. John Pantouw, MS; and Ir. Harmensyah, Dipl.SE.
- 5) Facilitator:
 - a. Facilitator of Public Awareness: Uly Hary Rusady; Ir. Trie Mulat Sunaryo M.Eng; Ir. T. Soetopo, MSc.; Dr. Ir. Ferry Putuhena; and Drs. Ari Setiawan.
 - b. Facilitator of Event Program: Ir. Abdul Afif, MBA; Ir. Silvi Tirawati; Ir. Sugarjito; Ir. Atie Tri Juniati, MT; and Ir. Bambang Adi Nugroho.
 - c. Facilitator of Documentation Program: Dr. Ir. Idreswari Guritno, MS; Ir. Simon Hasmono Himawan, MS; Dr. Ir. Budi WS; Heru Santosa; Ir. Emir Faridy; and Drs, Sumarko.

Forum Air Indonesia (FAI: Indonesian Water Forum): FAI is a periodical meeting inter-organizations as public sector, entrepreneurship and general society for making policy recommendation setting and strategy of sustainable development.

A7.2 Establishment of Gorontalo Province

(1) Background

These three decades, the centralization power and decision making were dominated by the Central Government. The regional development issues used to be the central jobs, and the region only carry out the development programmed by the central government. So the development programs in the region are sometimes different from the actual needs and desire of the community. In order to improve these administrative renovation from the centralization system to decentralization system is progressing over the country.

Even in the same province the development gap in Manado and Gorontalo was big and this lasted for a long time. Since Gorontalo has own historical background, human resources, infrastructure and economic potential, it is reasonable that Gorontalo and the surrounding areas have a chance to manage by themselves. Supported by these public opinion and the decentralization policy, Gorontalo Province has been established.

(2) Progress of Establishment of Gorontalo Province

The establishment of Gorontalo Province was agreed by Central Government with the Law No. 38/2000 pertaining the establishment of Gorontalo Province. The Provincial Governor was initially appointed by the Central Government. The other programs for the establishment of Gorontalo Province are as follow:

- 1) By the Governor Decree No. 01/2001, the organization and working order of Gorontalo Province, Regional Secretariat and Gorontalo Province Parliament Secretariat have been established.
- 2) By the Governor Decree No. 02/2001, the organization and working order of the Dinas in Gorontalo Province have been established. Nine Dinas were established as described in (4) of Section A7.1.

- 3) In the year of 2001, the member of the Gorontalo Provincial Parliament has been formed, and in December 2001, the Governor was elected by the Parliament.
- 4) At the beginning of the year 2002 the provincial Dinas was increased to eleven (11) as described in (4) of Section A7.1.

A7.3 Decentralization Policy

(1) Water Resources Sector Adjustment

WATSAL: Coping with financial deficit, the Government of Indonesia prepared a structural adjustment program of policy, institutional, regulatory, legal, and organizational reforms in the management of water resources and irrigation sector in 1999. The program was supported by the World Bank with Water Resources Sector Adjustment Loan (WATSAL) financed by Asian Development Bank (ADB) and Japan Bank for International Cooperation (JBIC). The program has four objectives as follows:

- 1) **Facilitating efficient environmentally and socially sustainable water resources development and management** by improving national policy, institutional, regulatory and decision-support frameworks:
- 2) **Strengthening of the institutional and regulatory framework** for integrated and equitable river basin management:
- 3) **Establishing effective regulatory institutions and implementation arrangements** for water pollution abatement and regional water quality management:
- 4) **Improving the performance and sustainability of irrigation systems** by establishing an institutional framework for transparent and accountable delivery of irrigation services and participatory fiscal support to democratic farmer organizations empowered with governance and financial authority to manage irrigation networks under their control:

Concern of the Study: The WATSAL program is an effort to adjust institutional and regulatory structure through legislative and organizational renovations covering whole water resources issues. The present Study has strong concern with the outcomes of the WATSAL program, because all the activities related to the water resources should follow them. Among others, major concerns of the Study are decentralizing water

resources management and establishing integrated water resources organization in the provincial level. The administration change toward decentralization system is ongoing in the Study Area as described in the following sub-section in line with the WATSAL program. The Technical Implementation Unit called as Balai PDSA, which would be the integrated water resources management unit of the Limboto-Bolango-Bone river basin, is being established over the country as an activity under the WATSAL program.

(2) Decentralization Policy

There was a change of administration system from the former centralization system to new decentralization system, mainly by the Law No. 22/1999 pertaining Regional Governance and the Law No. 25/1999 pertaining Fiscal Balance between Central and Regional Governments.

In the Water Resources Sector, the regulation used so far is the Law No. 11/1974 pertaining Water Resources. The Law No. 11/1974 follows the centralization system and need arrangement for the decentralization. The new paradigm of administration influences Water Resources Development to such as:

- 1) Economic valuation of water,
- 2) Decentralization,
- 3) People empowerment,
- 4) Bottom-up and top-down interfacing, and
- 5) Openness and transparency.

(3) Progress of Decentralization System in Water Resources Sector

The progress of decentralization system in the water resources sector is made in Central Government and in Regional Government as follows:

Central Government: There is an activity in the Central Government to replace the Law No. 11/1974 pertaining Water Resources and the Government Regulation No. 22/1982 pertaining Water Management. The restoration of Law No. 11/1974 was carried out by a task team and the draft of new law as substitution of Law No. 11/1974 was presented to a public consultation forum. The participants of the forum gave their opinion, comments, critics and inputs for the team to finalize the new law. Besides the

above, the following laws and regulations were enacted or renovated for the operation of decentralization.

- 1) Government Regulation No.77/2001 (December 2001) concerning Irrigation, replacing Government Regulation No.23/1982.
- 2) Government Regulation No.82/2001 (December 2001) concerning Management of Water Quality and Water Pollution Control, replacing Government Regulation No.1990.
- 3) Presidential Decree No.123/2001 (December 2001) concerning Water Resources Management Coordination Team.
- 4) Minister of Economic Decree No.14/M.EKON/12/2001 (December 2001) concerning Water Resources National Guideline.
- 5) Minister of Economic Decree No.15/M.EKON/12/2001 (December 2001) concerning Establishment of Secretariat of Water Resources Management Coordination Team.
- 6) Minister of KIMPRASWIL Decree No.529/KPTS/M/2001 (December 2001) concerning Guidance of Transfer of Authority of Irrigation Management and Water User Association.
- 7) Minister of Home Affair Decree No.50/2001 (December 2001) concerning Guideline of Water User Association Empowerment.

Local Government: Under the new administrative system of decentralization, all the authorities regarding water resources matter have been transferred to the local Government (Kabupaten/Kota). In order to administrate issues in the water resources sector, the local governments of Kabupaten and Kota Gorontalo have established Dinas, i.e., Dinas Pekerjaan Umum Kota Gorontalo (Dinas PU) and the Dinas Pekerjaan Umum dan Prasarana Wilayah Kabupaten Gorontalo (Dinas PU-Praswil).

Those two Dinas, which formerly have the job only for operation and maintenance of irrigation facilities, will have very big jobs. The former staffs of Water Resources Branch Office in Gorontalo were divided into three, Public Works Offices in Kota, Kabupaten and Province of Gorontalo.

(4) Expected Organization under Decentralization Policy

As explanation above, the Kabupaten and the City of Gorontalo will have very heavy job under the full Decentralization system. For this reason it is suggested that the

organization in public works sector of Kabupaten and City of Gorontalo needs to be upgraded with three Dinas of Sumber Daya Air, Bina Marga, and Cipta Karya. The suggested organization of Dinas Sumber Daya Air (SDA) is shown in Figure A7.3.1.

The institution which directly related to the activity of flood control is Dinas PU/KIMPRASWIL of Gorontalo Province, Dinas PU-Praswil of Kabupaten Gorontalo and Dinas PU of Kota Gorontalo. The total staff of these offices in Gorontalo Province is listed in Table A7.3.1. Staffs in these offices consist of technical and administration staff including some organic and non-organic staff. For the implementation of water resources management in the Province of Gorontalo, supporting resources both human and financial resources are needed to these offices.

(5) Budget under Decentralization Policy

Budget: The Law No. 11/1974 pertaining Water Resources states that all the budget for implementation of the activities of water resources management and water resources development shall be regulated by the Government, and the community which gets direct benefit from the water resources can participate in budgeting.

The water contribution has been going on, especially for the farmers which is known as Iuran Pelayanan Irigasi (IPAIR: Irrigation Service Contribution) and water fee is not in effect. The water fee and water contribution constitutes total revenue (TR) of the water.

According to the Law No. 11/1974, all the costs for developing water consist of three elements, namely, costs of (1) water use development, (2) keeping water balance, and (3) water conservation. The total cost (TC) and total revenue (TR) for water management in a river basin may have three cases of possibility:

- 1) TC is bigger than TR ($TC > TR$),
- 2) TC is same with TR ($TC = TR$), and
- 3) TC is smaller than TR ($TC < TR$).

Considering the fact that water is public goods, if $TC > TR$ the government/local government should give subsidy.

Table A7.3.2 shows the breakdown of regional revenue based on the Law No. 25/1999. Table A7.3.3 shows the revenue of Kabupaten Gorontalo in the fiscal year of 1998/1999

and 1999/2000. Table A7.3.4 shows the budget of Kabupaten Gorontalo in the fiscal year of 1998/1999 and 1999/2000. Table A7.3.5 shows the regional income and budget for operation maintenance of public work in Gorontalo Province. Table A7.3.6 shown the budget of flood control in LBB River basin in the year of 2002.

(6) Current Issues of Decentralization

Fundamental Changes in Administration: Current issues of the decentralization are mainly those related to the transition for the centralization to decentralization systems. This administrative renovation from the centralization system to the decentralization requires fundamental changes of the institutions of the central government, local governments, and local communities as well. For the operation of the decentralization, relevant laws and subsequent regulations must be enacted.

Issuance of Regulations and Decrees: The decentralization policy was announced in 1999 mainly by Law No.22/1999 and Law No.25/1999. Since then, Central Government devoted to adjustment of relevant regulations and decrees, and as far as the water resources concerned, most of the regulations and decrees were issued in December 2001. Based on the legal frameworks of the Central Government, regulations and decrees of the provincial and regional governments are now being issued gradually.

Delay of Preparation: Owing to the delay of the announcement of the legal frameworks of the decentralization, it was also delayed to prepare for transfer of authorities from the central and provincial governments to regional governments (Kabupaten/Kota). The Kabupaten/Kota are also not ready to receive the authorities. Gorontalo Province was newly established in 2000 and the Governor had to establish his own administrative institutions first. Provincial government has established Dinas PU/Kimpraswil, and Kabupaten and Kota Gorontalo also have established Dinas PU-Praswil and Dinas PU, respectively for public work services including water resources management. These Dinas, however, are not yet enough to implement the authorities in staff number and their capability, though the preparedness is progressing day by day.

Empowerment of Local Communities: Under the decentralization administration, the local communities and local organization like Farmer Organization and Water User's Association (WUA) also share important roles in water resources management. Empowerment of local communities with institutional and financial arrangements are

necessary, so that they can participate in the water resources management with reasonable contributions.

Balai PSDA: If the transition toward decentralization lasts too long and water management falls in disorder, there would be a possibility of local conflict of interests in the community and territorial ego among the regional governments related to the water resources management. Establishment of Balai PSDA in early stage is expected to direct and manage water resources in LBB basin coordinating the governmental agencies and community organizations.

A7.4 Legal Aspect

Legal framework of Water Resources Management in Indonesia reflects local customs and evolving policies. It consist of the Indonesia Constitution of 1945, and Water Resources Development Law No. 11 (1974) and numerous subsequent regulations. In accordance with Indonesian Constitution of 1945, all water resources and natural riches contained therein shall be owned by the nation's people and shall be managed by the state for the optimum welfare of the people. Under the Indonesian Constitution of 1945, there are various some other legal authorities, namely:

- 1) The Indonesian Constitution of 1945
- 2) People's Consultative Assembly Decrees
- 3) Statute Laws
- 4) Government Regulation
- 5) President Decrees
- 6) Regional Regulation, etc.

Major regulations relevant to flood mitigation are listed in Table A7.4.1. The basic policy statement for the water resources management is the Law No. 11 (1974).

Table A7.1.1 AREA AND POPULATION IN GORONTALO PROVINCE

No.	Regency	Area (Km ²)	Population
1.	Kota Gorontalo	64.80	134,198
2.	Kab. Gorontalo	6,739.27	189,793
3.	Kab. Boalemo *)	5,411.38	514,107
	Total	12,215.45	838,098

*) : Not included in the LBB Basin

Table A7.1.2 ADMINISTRATIVE FEATURES OF KOTA GORONTALO

Kecamatan	Capital	Total			
		Kelurahan	Lingk,	RW	RT
(1)	(2)	(3)	(4)	(5)	(6)
1. Kota Barat	Buladu	11	44	107	305
2. Kota Selatan	Biawao	20	93	201	547
3. Kota Utara	Dulomo	14	54	151	450
Total		45	191	459	1,302

Source: Gorontalo dalam angka 2000

Table A7.1.3 HOUSEHOLD AND POPULATION OF KABUPATEN GORONTALO

Kecamatan	Total Household	Total Population		
		Man	Women	Total
(1)	(2)	(3)	(4)	(5)
1. Batudaa Pantai *)	4,518	9,319	8,701	16,020
2. Batudaa	15,417	29,184	29,431	58,615
3. Tibawa	13,919	27,130	28,010	55,148
4. Boliyohuto	17,643	34,404	33,345	67,749
5. Sumalata *)	6,562	12,278	11,545	23,823
6. Kwandang *)	12,161	23,353	23,047	46,400
7. Limboto	15,291	27,094	20,802	56,556
8. Telaga	14,865	28,179	29,495	57,674
9. Atinggola *)	4,141	7,902	7,706	15,608
10. Tapa	7,003	13,122	13,554	26,676
11. Kabila	9,392	17,917	19,046	36,961
12. Suwawa	5,729	11,244	11,062	22,306
13. Bone Pantai *)	6,759	14,642	13,927	28,569
Total	133,400	255,768	249,671	512,105

Source: Kantor Statistik Kabupaten Gorontalo

Remarks: *) Kecamatan which are not included in LBB Basin

Table A7.3.1 LOCAL GOVERNMENT STAFF IN GORONTALO PROVINCE

No.	Institution	Total Institution			Personnel		
		Kab/ City	Kecamatan	Kelurahan/ Desa	Technic Or/N-Or	Adm, Or/N-Or	Total
1	Reg. Government Adm.						
1.1	Province of Gorontalo	3	-	-	-	740/278	740/278
1.2	City of Gorontalo	-	3	45/0	-	4307/0	4307/0
1.3	Kabupaten of Gorontalo	-	13	33/198	-	8687/0	8687/0
2	Public Works						
2.1	Province of Gorontalo	-	-	-	70/181	29/56	99/237
2.2	City of Gorontalo	-	-	-	38/3	15/0	53/3
2.3	Kabupaten of Gorontalo	-	-	-	57/20	16/9	73/29
3	Kecamatan of Gorontalo						
3.1	City of Gorontalo	-	-	-	-	60/0	60/0
3.2	Kabupaten of Gorontalo	-	-	-	-	223/0	223/0
4	Kelurahan/Village						
4.1	City of Gorontalo	-	-	-	-	195/0	195/0
4.2	Kabupaten of Gorontalo	-	-	-	-	119/0	119/0

Note: Or = Organic N-Or, = Non Organic

Sources : Gorontalo Dalam Angka 2001

Table A7.3.2 REGIONAL REVENUE BASED ON LAW No. 25/1999

Regional Revenue	Source Classification	Breakdown of Regional Revenue	Allocation for Central/ Regional (%)
Regional Income Sources	a. Local Original Revenue	a.1. Regional Tax a.2. Regional Retribution a.3. Regional Company a.4 Others	
	b. Balancing Budget	b.1. Regional Portion of PBB b.2. Tax of land consession b.3. Income from forestry, Agriculture & Fishery b.4. Income from oil Mining b.5. Income from Gas Mining b.6. General Allocation Budget b.7. Special Allocation Budget (reboisasi)	10% C, 90 R 20 % C, 80 % R 20 % C, 80 % R 85 % C, 15 % R 70 % C, 30 % R 25 % APBN, 10% Prop, 90% city 60% C, 40% R
	c. Regional Loan	c.1. Inland Source c.2. Foreign Source c.3. Longterm Loan c.4. Short term loan	
	Others		

Note: C = Central Government
R = Regional Government
P = Province
Kp = Produced Kabupaten
Ko = Others Kabupaten in the Province

Province and Kabupaten/Kota Portion

- b1 Adjustment to the Law
- b2 Adjustment to the Law
- b3 Forestry :
- i) Forest Management Authority Retribution R = 80%, P = 16%, Kp = 64%
- ii) Forest Resources Provision R = 80%, P = 16%, Kp = 32%, Ko = 32%
- Agriculture/Fishery:
- i) Land rent R = 80%, P = 16%, Kp = 64%
- ii) Expl/explor, Retribution (royalty) R = 80%, P = 16%, Kp = 32, Ko = 32%
- iii) Fishery yield picking R = 80%, to all Kabupaten of Indonesia
- b4 Oil Mining R = 15%, P = 3%, Kp = 6%, Ko = 6 %
- b5 Gas Mining R = 30%, P = 6%, Kp = 12%, Ko = 12%

**Table A7.3.3 ACTUAL REVENUE OF KABUPATEN GORONTALO
(TA, 1998/1999 and 1999/2000)**

Details	1998/1999 (000 Rupiah)	1999/2000 (000 Rupiah)
(1)	(2)	(3)
REGIONAL INCOME	83,477,693	96,178,470
1. Balance from Previous Year Calculation	628,751	2,001,513
2. Original Regional Income		
- Regional tax	1,978,431	2,399,416
- Regional Retribution	669,057	833,583
- Profit of State Company	941,397	1,238,347
- Income from Dinases	118,934	13,000
- Others Income	249,043	261,491
3. Income from Governemnt Allocation and / or High Level Agency	77,870,512	91,777,541
- Sharing taxed income	-	8,109,904
- Sharing non- taxed income	4,222,711	1,405,906
- Regional Autonomus Subsidence	45,706,621	62,170,049
- Development Allocation	27,941,180	20,091,682
- Income from others	-	-
4. Regional Government Loan	-	-
B. ACCOUNTING DEPARTMENT		11,153,253
TOTAL	92,618,059	107,331,723

**Table A7.3.4 ACTUAL BUDGET OF KABUPATEN GORONTALO
(TA 1998/1999 and 1999/2000)**

Details	1998/1999 (000 Rupiah)	1999/2000 (000 Rupiah)
(1)	(2)	(3)
A. Routine Expenditure	52,201,110	69,852,318
1. Staffs Expenses	44,410,182	60,263,425
2. Material Expenses	3,473,395	4,144,812
3. Details Expenses	739,152	884,191
4. Field Trip or Duty Travel Expenses	775,413	1,008,162
5. Others expenses	1,786,623	1,810,336
6. Installment Payment (loan), Debt, interest	29,016	-
7. Subsidence Fine & Donation for Lower Level Region	571,065	1,187,723
8. Retired, donation & Ordorstand	-	-
9. Others Expenditure	218,392	438,359
10. Miscelenous	197,862	114,860
B. DEVELOPMENT EXPENDITURE	29,275,050	23,111,102
TOTAL	81,476,180	92,963,420

**Table A7.3.5 REGIONAL INCOME AND BUDGET FOR PUBLIC WORK
O&M IN GORONTALO PROVINCE**

No,	Institution	Local Original Income	Budget for O&M
1	Regional Government		
1.1	Province of Gorontalo	1,640,190,050	
1.2	City of Gorontalo	4,953,300,000	
1.3	Kabupaten of Gorontalo	5,115,134,864	
2	Public Works		
2.1	Province of Gorontalo	-	1,596,177,640
2.2	City of Gorontalo	-	908,481,020
2.3	Kabupaten of Gorontalo	-	1,007,272,450
3	Kecamatan		
3.1	City of Gorontalo	-	-
3.2	Kabupaten of Gorontalo	-	-
4	Kelurahan/Village		
4.1	City of Gorontalo	-	-
4.2	Kabupaten of Gorontalo	-	-

The source from Dinas PU Prop, Gorontalo

Table A7.3.6 ACTIVITY OF FLOOD CONTROL IN LBB – BASIN GORONTALO PROVINCE 2002

Rp. 1000,-

NO	ITEM	RIVER	KECAMATAN	VOLUME	Budget			REMARK
					NATIONAL	PROVINCE	KAB/KOTA	
I.	Pro. PBPP Prov. Gorontalo 1. Dike 2. Dike 3. Dike 4. Dike	Bone River Tamalate River Biyonga River Bolango River	Suwawa Kota Timur Limbotto Limbotto		Rp. 3.309.000	-	-	
					Rp. 727.000			
					Rp. 645.000			
					Rp. 863.000			
				Rp. 1.074.000				
II.	Proyek Penanggulangan Banjir Wil. I Prov. Gorontalo 1. Flood Control 2. Flood Control 3. Flood Control 4. Feasibility Study	Bolango River Bone River Hepuhulawa R. Bone River	Tapa Suwawa Limbotto Suwawa		Rp. 3.150.000			
					Rp. 900.000			
					Rp. 700.000			
					Rp. 250.000			
				Rp. 1.300.000				
III.	Prov. Normalisasi Sungai Kabupaten Gorontalo 1. Checkdam 2. Revetment 3. Bank Protection	Bulota River Nata River Bulota River	Tapa Tibawa Limbotto				Rp. 589.000 Rp. 175.000 Rp. 150.000 Rp. 264.000	

Table A7.4.1 MAJOR REGULATIONS RELATED TO FLOOD MITIGATION (1/5)

No.	NUMBER / YEAR	TITLE OF REGULATION, DECREE
01.	I. <u>Undang - undang</u> UUD 1945	I. <u>Law</u> Undang-undang Dasar Republik Indonesia, 1945 <i>Constitution 1945 of The Republic of Indonesia</i>
02.	UU No. 11 / 1974	Undang-undang No. 11 Tahun 1974 tentang Pengairan <i>Law No. 11 the Year 1974 concerning Water Resources Management</i>
03.	UU N0. 23 / 1997	Undang-undang No. 23 Tahun 1997 tentang Pengelolaan Lingkungan Hidup. <i>Law No. 23 The Year 1997 concerning Living Environmental Management.</i>
04.	UU No.22 / 1999	Undang-Undang No. 22 Tahun 1999 tentang Pemerintahan Daerah <i>Law Number 22 The Year 1999 concerning Regional Government Administration</i>
05.	UU No. 25 / 1999	Undang-undang No. 25 Tahun 1999 tentang Perimbangan Keuangan antara Pusat dan Daerah. <i>Law No. 25 The Year 1999 concerning The Balance of Finance between Central and Regional Government.</i>
06.	UU No. 38 / 2000	Undang-undang No. 38 Tahun 2000 tentang Pembentukan Provinsi Gorontalo <i>Law No. 38 The Year 2000 concerning The Establishment of Gorontalo Province.</i>
01.	II. <u>Peraturan Pemerintah</u> PP 22 / 1982	II. <u>Government Regulation</u> Peraturan Pemerintah No. 22 Tahun 1982 tentang Tata Pengaturan Air <i>Government Regulation No. 22 The Year 1982 concerning Water Resources Management</i>
02.	PP No. 23 / 1982	Peraturan Pemerintah No. 23 Tahun 1982 tentang Irigasi <i>Government Regulation No. 23 The Year 1982 concerning Irrigation.</i>
03.	PP No. 29 / 1986	Peraturan Pemerintah No. 29 Tahun 1986 tentang Analisa Dampak Lingkungan <i>Government Regulation No. 29 The Year 1986 concerning Environment Impact Analysis.</i>

Table A7.4.1 MAJOR REGULATIONS RELATED TO FLOOD MITIGATION (2/5)

No.	NUMBER / YEAR	TITLE OF REGULATION, DECREE
04.	PP No.14 / 1987	Peraturan Pemerintah No. 14 Tahun 1987 tentang Penyerahan Sebagian Urusan Pemerintahan di Bidang Pekerjaan Umum Kepada Daerah <i>Government Regulation No. 14 The Year 1987 concerning Transfer of Government Affairs in Public Works Sector to The Regional Government.</i>
05.	PP No. 20 / 1990	Peraturan Pemerintah No. 20 Tahun 1990 tentang Pengendalian Pencemaran Air. <i>Government Regulation No. 20 The Year 1990 concerning Water Pollution Control.</i>
06.	PP No. 27 / 1991	Peraturan Pemerintah No. 27 Tahun 1991 tentang Rawa <i>Government Regulation No. 27 The Year 1991 concerning Swamp</i>
07.	PP No. 35 / 1991	Peraturan Pemerintah No. 35 Tahun 1991 tentang Sungai <i>Government Regulation No. 35 The Year 1991 concerning River</i>
08.	PP No. 25 / 2000	Peraturan Pemerintah No. 25 Tahun 2000 tentang Kewenangan Pemerintah dan Kewenangan Propinsi sebagai Daerah Otonom <i>Government Regulation No. 25 The Year 2000 concerning The Authority of Central Government and the Authority of Province as an Autonomous Region</i>
09.	PP No. 84 / 2000	Peraturan Pemerintah No. 84 Tahun 2000 tentang Pedoman Organisasi, Perangkat Daerah. <i>Government Regulation No. 84 The Year 2000 concerning The Guideline of Regional Institution Organization.</i>
10.	PP No. 39 / 2001	Peraturan Pemerintah No. 39 Tahun 2001 tentang PENYELENGGARAAN DEKONSENTRASI. <i>Government Regulation No. 39 The Year 2001 concerning The Deconsentrated Functions.</i>
11.	PP No. 77 / 2001	Peraturan Pemerintah No. 77 Tahun 2001 tentang Irigasi <i>Government Regulation No. 77, The Year 2001, concerning Irrigation</i>

Table A7.4.1 MAJOR REGULATIONS RELATED TO FLOOD MITIGATION (3/5)

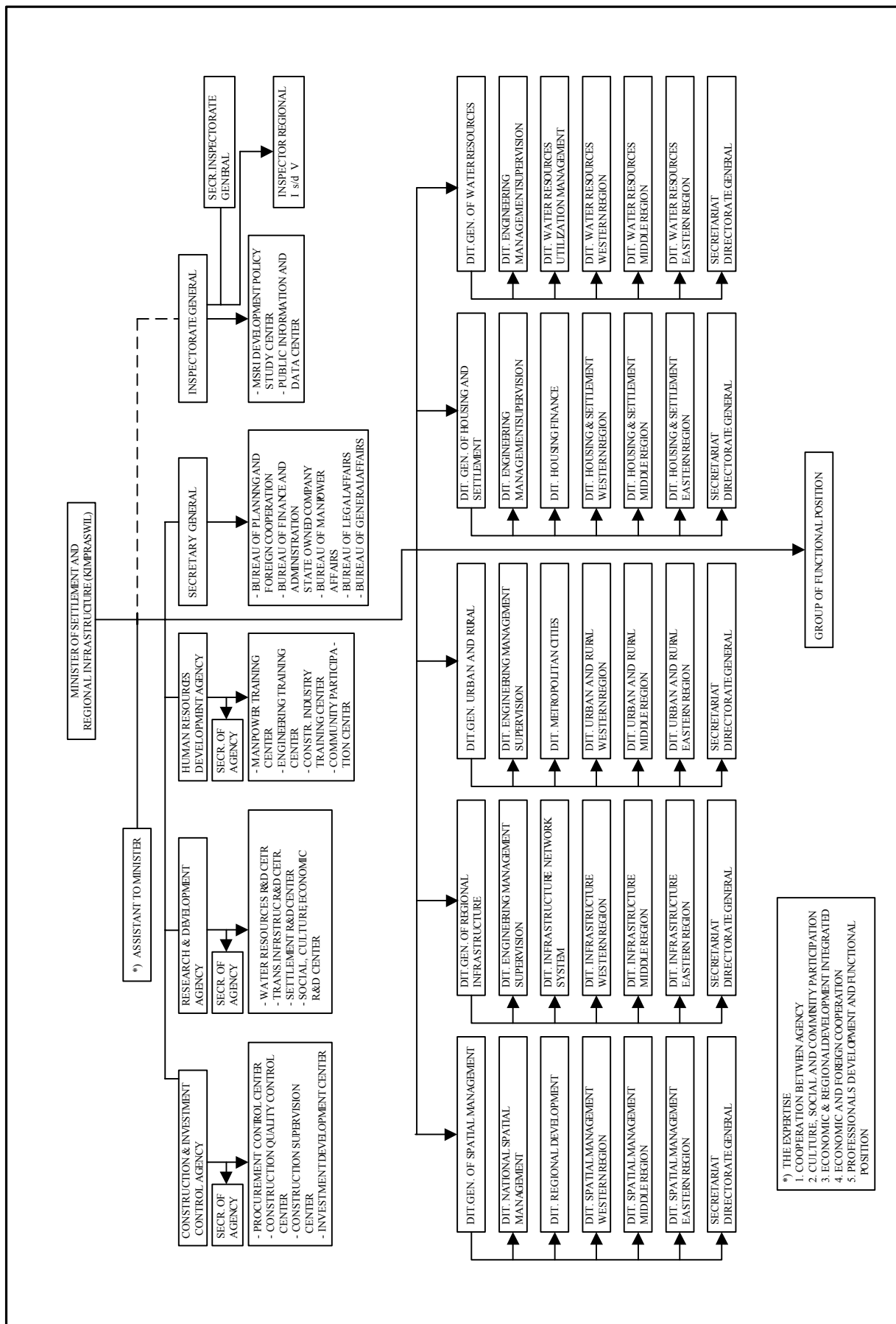
No.	NUMBER / YEAR	TITLE OF REGULATION, DECREE
12.	PP No. 82 / 2001	Peraturan Pemerintah No. 82 Tahun 2001 tentang Pengelolaan Kualitas Air dan Pengendalian Pencemaran Air <i>Government Regulation No. 82, The Year 2001, concerning The Management of Water Quality and Water Pollution Control</i>
01.	III. <u>Instruksi Presiden / Keputusan Presiden</u> INPRES No. 2 / 1984	III. <u>Presidential Instruction / Presidential Regulation</u> Instruksi Presiden RI No. 2 Tahun 1984 tentang Pembinaan Perkumpulan Petani Pemakai Air <i>Presidential Instruction No . 2 The Year 1984 concerning Strengthening of Water User' Association</i>
02.	KEPPRES No. 23 / 1990	Keputusan Prisiden RI No. 23 Tahun 1990 tentang Badan Pengendalian Dampak Lingkungan (Bapedal) <i>Presidential Decree No. 23 The Year 1990 concerning The Establishment of Environment Impact Control Body .</i>
03.	KEPPRES No. 22 / 1990	Keputusan Presiden RI Nomor 32 Tahun 1990 tentang Pengelolaan Kawasan Lindung <i>Presidential Decree No. 22 The Year 1990 concerning Management of Protected Area.</i>
04.	KEPPRES No.9 / 1999	Keputusan Presiden RI No. 9 Tahun 1999 tentang Pembentukan Tim Koordinasi Kebijakan Pendayagunaan Sungai dan Pemeliharaan Kelestarian DAS <i>President Decree No. 9 The Year 1999 concerning the Establishment of Policy Coordination Team for River Efficiency Use and Conservation of River Basin</i>
05.	KEPPRES No. 177/ 2000	Keputusan Presiden RI No. 177 Tahun 2000 tentang Susunan Organisasi dan Tugas Departemen. <i>Presidential Decree No. 177 The Year 2000 concerning Organization Arrangement and Obligation of Department.</i>
06.	KEPPRES No. 234 /M- 2000	Keputusan Presiden RI No. 234/M Tahun 2000 tentang Pembentukan Kabinet Periode 1999 - 2004 <i>Presidential Decree No. 234/M The Year 2000 concerning Establishment of Kabinet Period Of 1999 – 2004</i>

Table A7.4.1 MAJOR REGULATIONS RELATED TO FLOOD MITIGATION (4/5)

No.	NUMBER / YEAR	TITLE OF REGULATION, DECREE
07.	KEPPRES No. 123 / 2001	Keputusan Presiden RI No. 123 Tahun 2001 tentang Tim Koordinasi Pengendalian Sumber Daya Air <i>Presidential Decree No. 123 The Year 2001 concerning Coordination Team of Water Resources Control.</i>
01.	IV. <u>Peraturan / Keputusan Menteri</u> PERMEN PU 49/PRT/ 1990	IV. <u>Ministerial Regulation / Decree</u> Peraturan Menteri Pekerjaan Umum No. 49 / PRT / Tahun 1990 tentang Tata Cara dan Persyaratan Izin Penggunaan Air dan atau Sumber Air <i>Minister of Public Works Regulation No . 49 / PRT / 1990 concerning The Procedures and Condition for Water or Water Resources Use License</i>
02.	PERMEN PU 57 / 1991	Peraturan Menteri Pekerjaan Umum No. 57 / PRT / 1991 tentang Pelaksanaan Penyerahan Sebagian urusan di Bidang Pekerjaan Umum Kepada Pemerintah Daerah Tingkat I dan Pemerintah Daerah Tingkat II. <i>Minister of Public Works Regulation No.57/PRT/1991 concerning The Implementation of Transfer Part of Government Affairs to The Regional Government Level I and Level II.</i>
03.	PERMEN PU No. 63 / 1991	Peraturan Menteri Pekerjaan Umum No. 63/PRT/1991 tentang Garis Sempadan Sungai, Daerah Manfaat Sungai, Daerah Penguasaan Sungai dan Bekas Sungai. <i>Minister of Public Works Regulation No. 63/PRT/ 1991 concerning River Buffer zone, River Benefit Boundary, River Authority Boundary and Rivers Trace..</i>
04.	PERMEN PU No.67 / 1993	Peraturan Menteri Pekerjaan Umum No. 67/PRT/ 1993 tentang Panitia Tata Pengaturan Air Propinsi Daerah Tingkat I <i>Minister of Public Works Regulation No. 67/PRT/ 1993 concerning Water Management Committee of Provincial Regional Level I.</i>
05.	KEPMEN KIMPRASWIL . No.01/KPTS/ 4 / 2001	Keputusan Menteri Kimpraswil No. 01/KPTS/4/2001 tentang Organisasi dan Tata Kerja Departemen Permukiman dan Prasarana Wilayah.. <i>Minister of Public Works Decree No. 01/KPTS/4/2001 concerning Organization and Work Order Ministry of Settlement and Regional Infrastructure.</i>

Table A7.4.1 MAJOR REGULATIONS RELATED TO FLOOD MITIGATION (5/5)

No.	NUMBER / YEAR	TITLE OF REGULATION, DECREE
01.	<p>V. <u>Keputusan Gubernur / Keputusan Daerah</u></p> <p>Kep.GUB No. 2 / 2001</p>	<p>V. <u>Governor's Decree / Regional Decree</u></p> <p>Keputusan Gubernur Gorontalo No. 02 Tahun 2001 tentang Pembentukan Dinas di Provinsi Gorontalo <i>Governor of Gorontalo Decree No . 2 The Year 2001 concerning Establishment of Dinases of Gorontalo Province</i></p>
02.	<p>PERDA Prov. Gorontalo No. 07 / 2002</p>	<p>Peraturan Daerah Provinsi Gorontalo No. 07 Tahun 2002 tentang Pembentukan Dinas di Provinsi Gorontalo.</p> <p><i>Governor of Gorontalo Decree No .07 The Year 2002 concerning Establishment of Dinases of Gorontalo Province .</i></p>
03.	<p>PERDA Kota Gorontalo No. 19 / 2000</p>	<p>Peraturan Daerah Kota Gorontalo No. 19 Tahun 2000 tentang Organisasi dan Tata Kerja Dinas di Daerah Kota Gorontalo</p> <p><i>Gorontalo City Regional Regulation No. 19 The Year 2000 concerning Organization and Work Order of Dinases in Kota Gorontalo.</i></p>
04.	<p>PERDA Kabupaten Gorontalo No. 43 / 2000</p>	<p>Peraturan Daerah Kabupaten Gorontalo No. 43 Tahun 2000 tentang Organisasi dan Tata Kerja Dinas Pekerjaan Umum dan Prasarana Wilayah Kabupaten Gorontalo</p> <p><i>Kabupaten Gorontalo Regional Regulation No. 43 The Year 2000 concerning Establishment the Organization and Work Order of Dinas Pekerjaan Umum and Prasarana Wilayah Kabupaten Gorontalo.</i></p>



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Figure A7.1.1 ORGANIZATIONAL STRUCTURE OF KIMPRASWIL

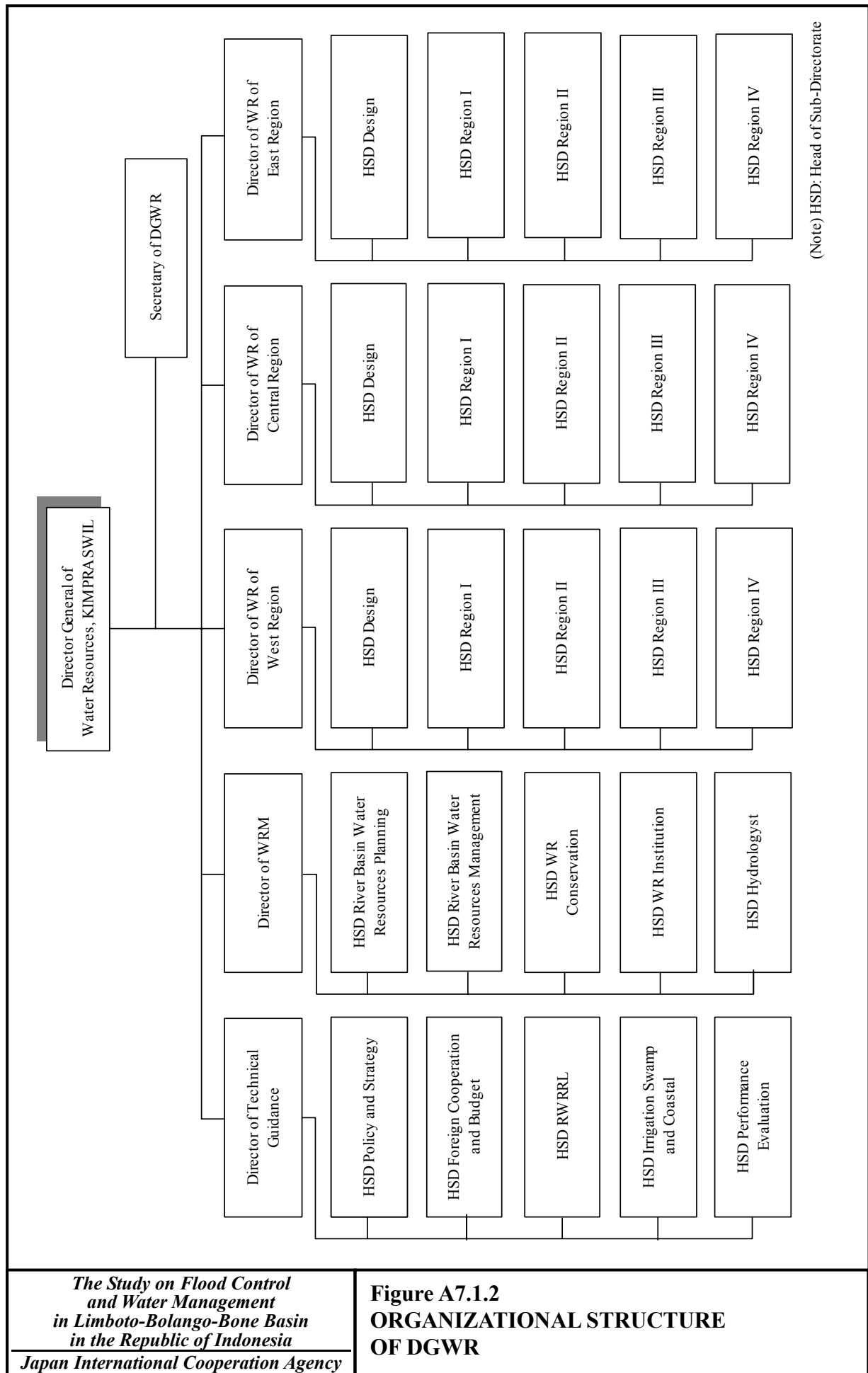
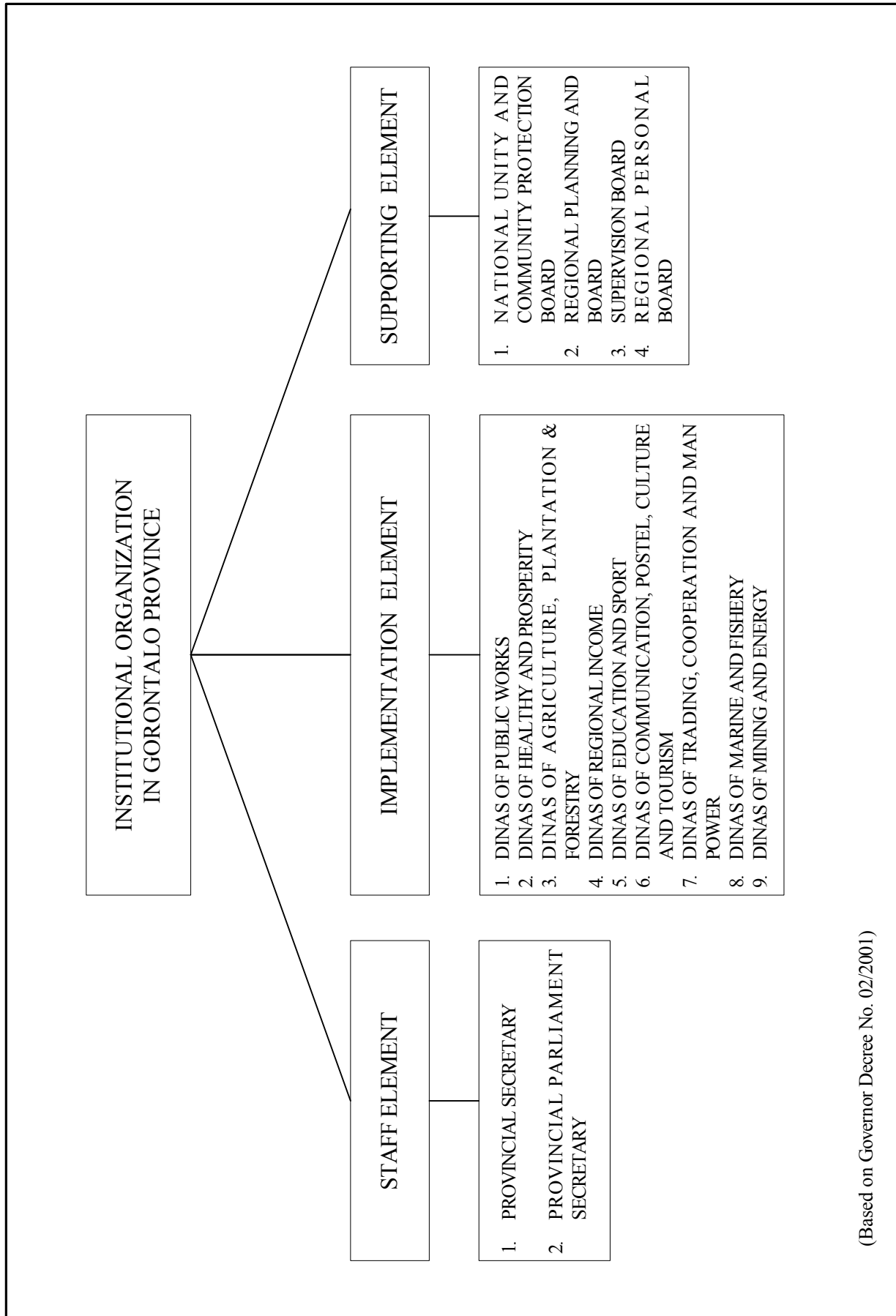
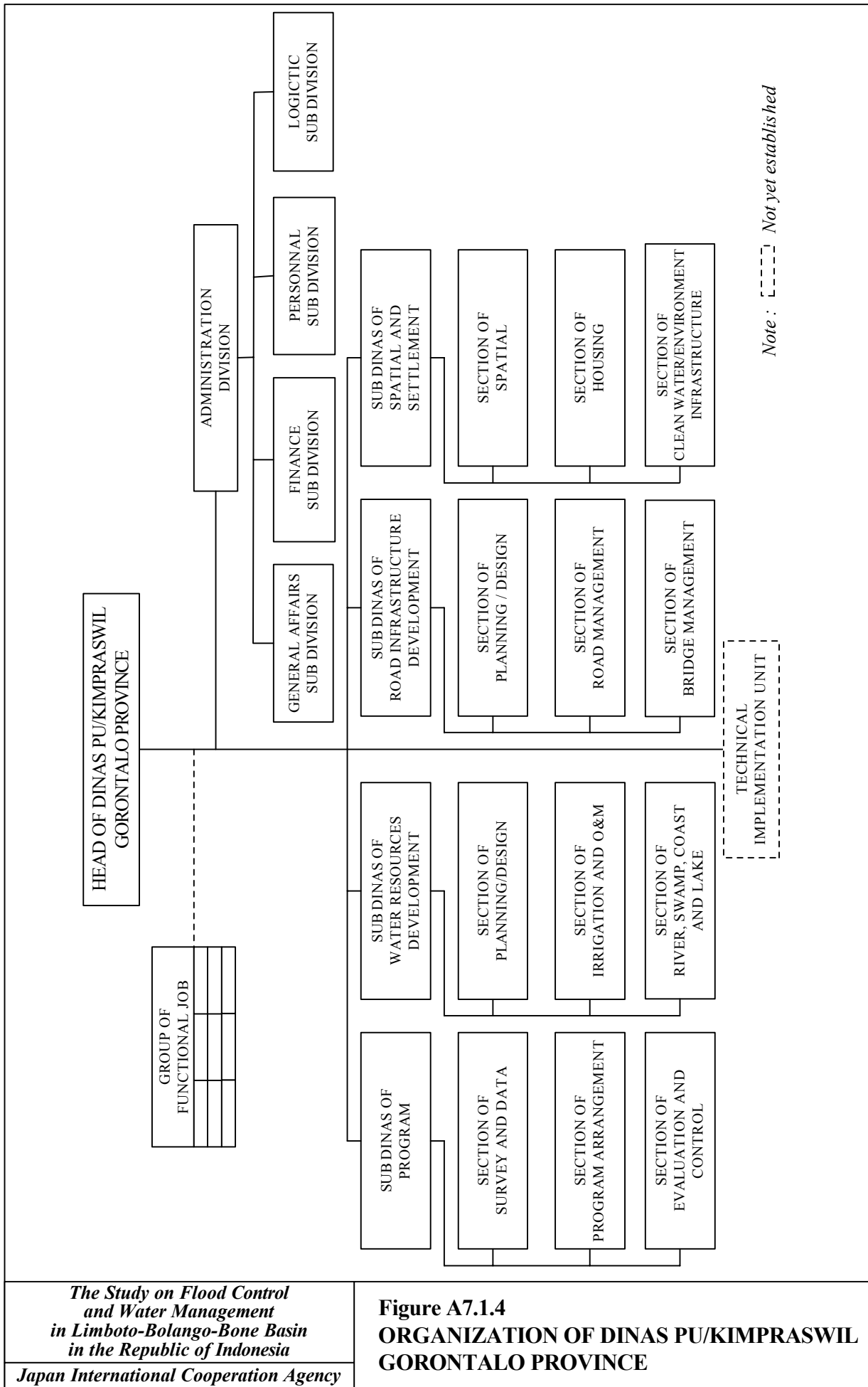


Figure A7.1.2 ORGANIZATIONAL STRUCTURE OF DGWR



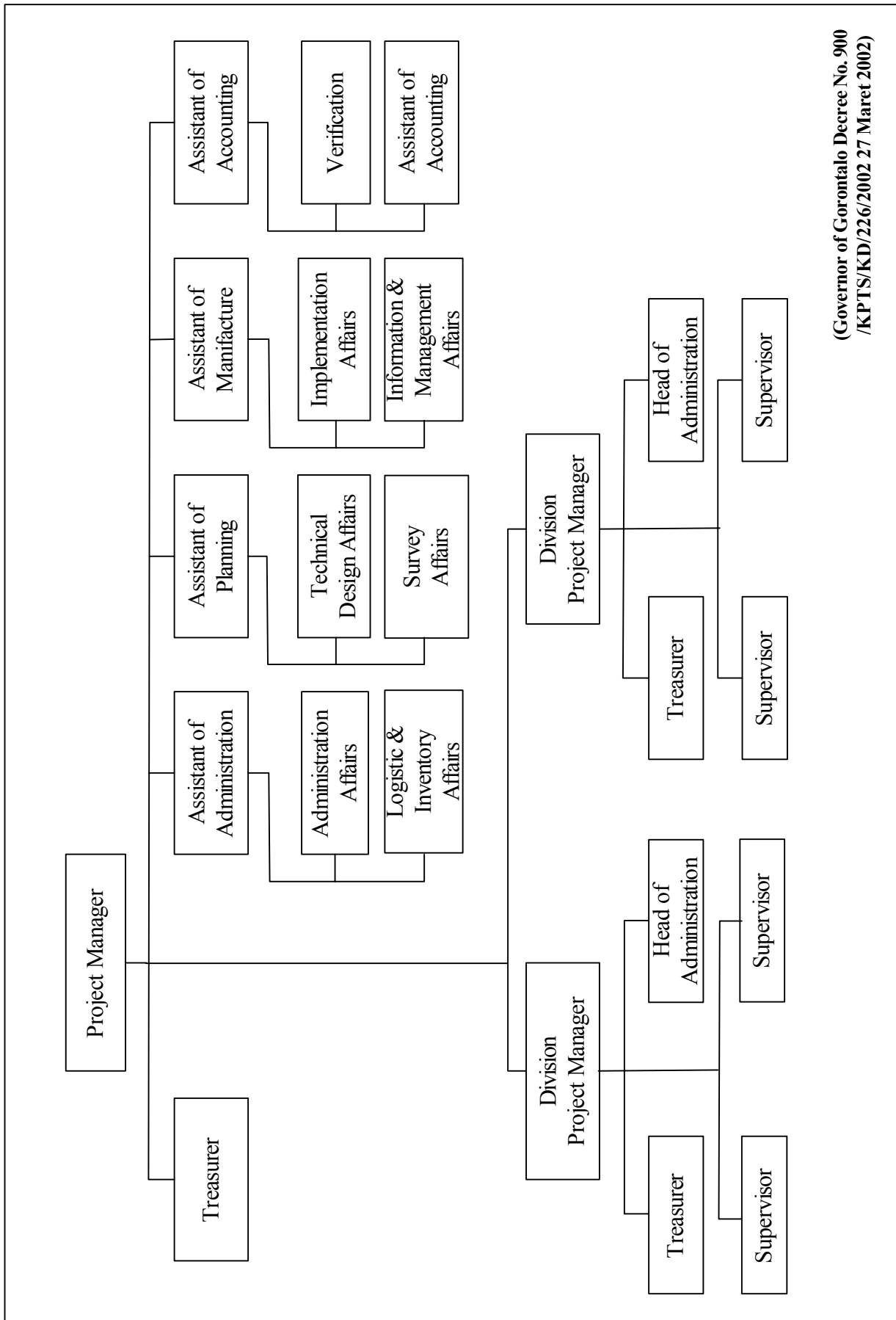
(Based on Governor Decree No. 02/2001)

Figure A7.1.3
INSTITUTIONAL ORGANIZATION OF GORONTALO PROVINCE



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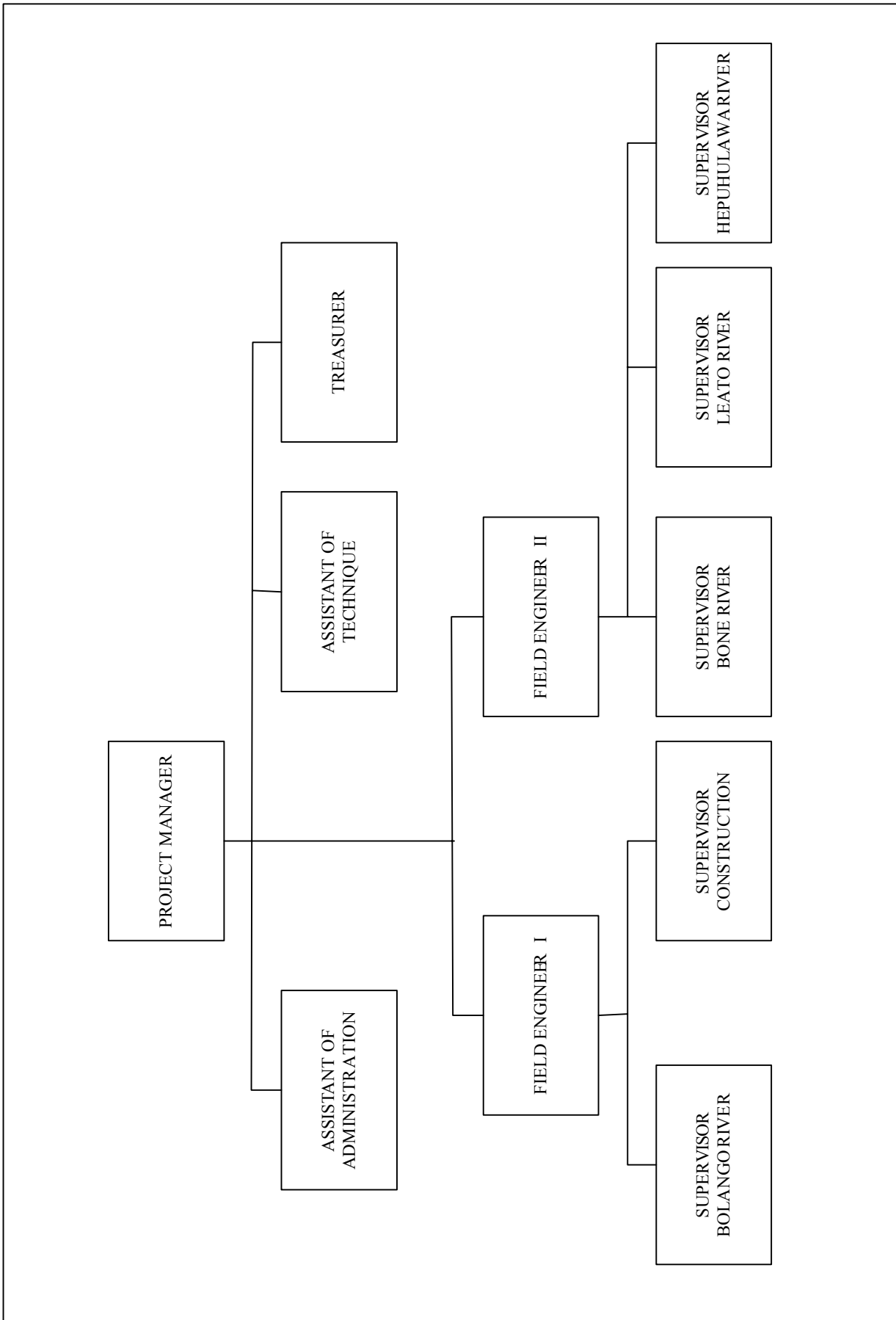
Figure A7.1.4 ORGANIZATION OF DINAS PU/KIMPRASWIL GORONTALO PROVINCE



(Governor of Gorontalo Decree No. 900 /KPTS/KD/226/2002 27 Maret 2002)

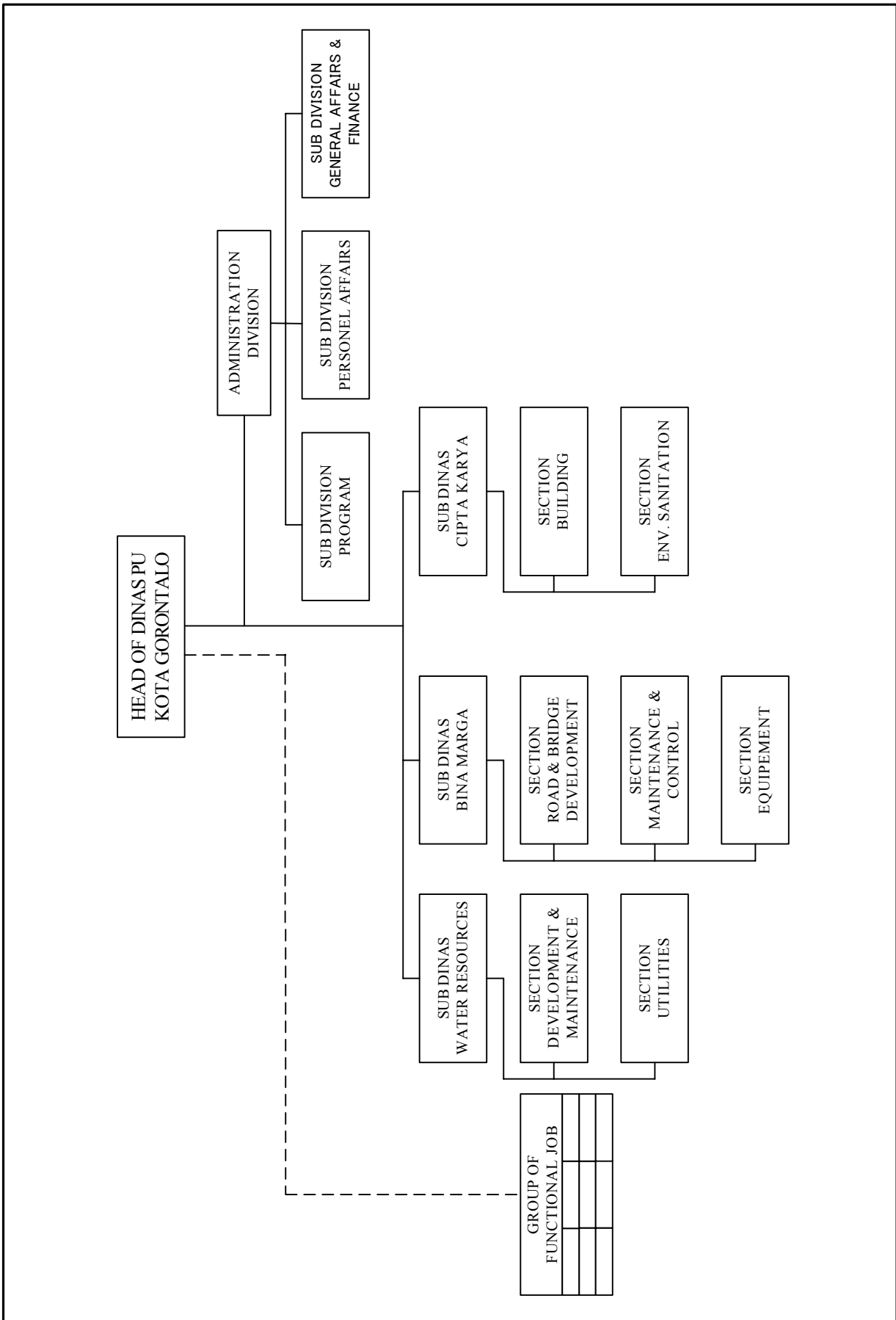
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Figure A7.1.5 ORGANIZATION OF FLOOD CONTROL AND COSTAL PREVENTION GORONTALO PROVINCE



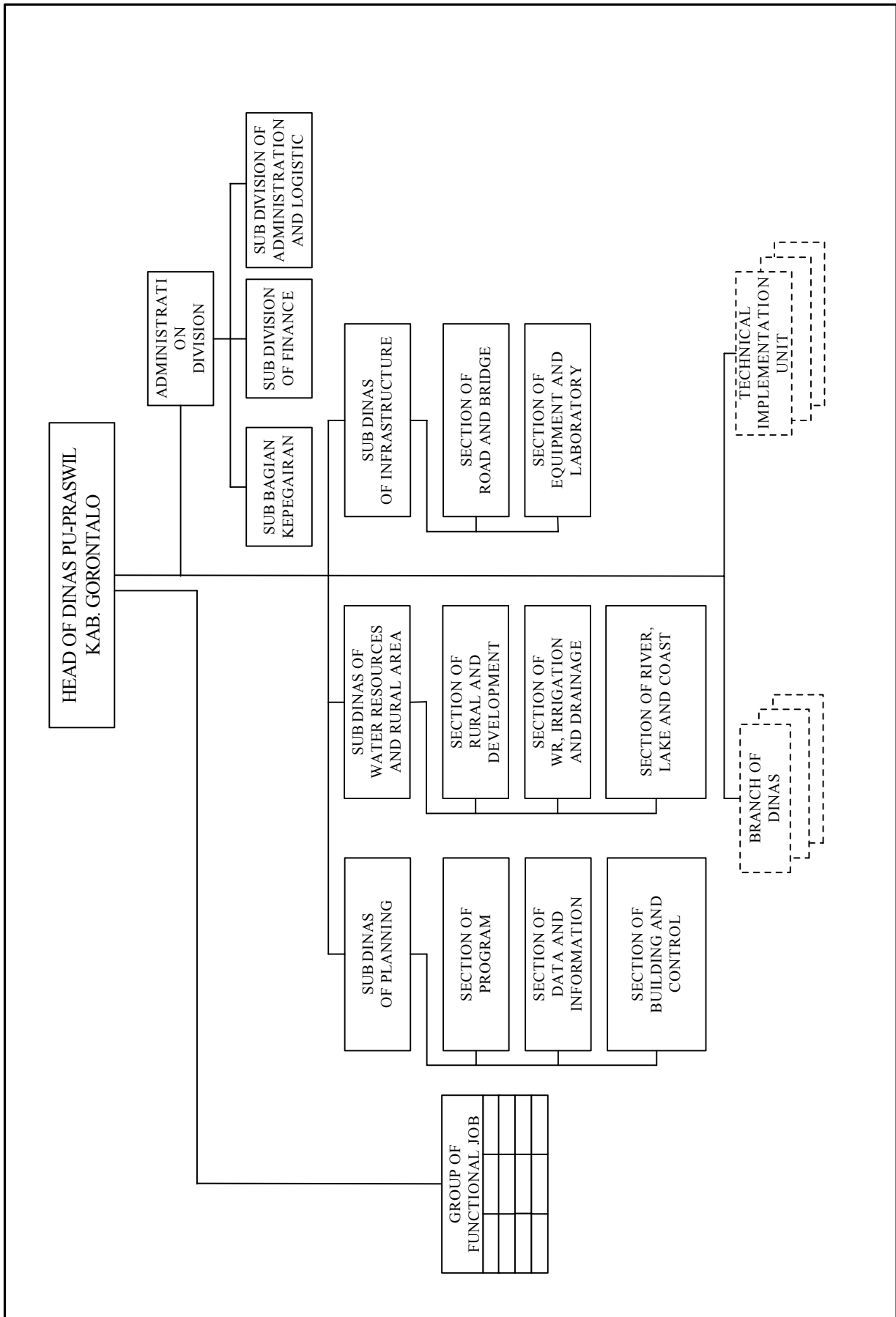
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Figure A 7.1.6
ORGANIZATION SCHEME
OF FLOOD CONTROL
REGION I, DINAS PU KIMPRASWIL



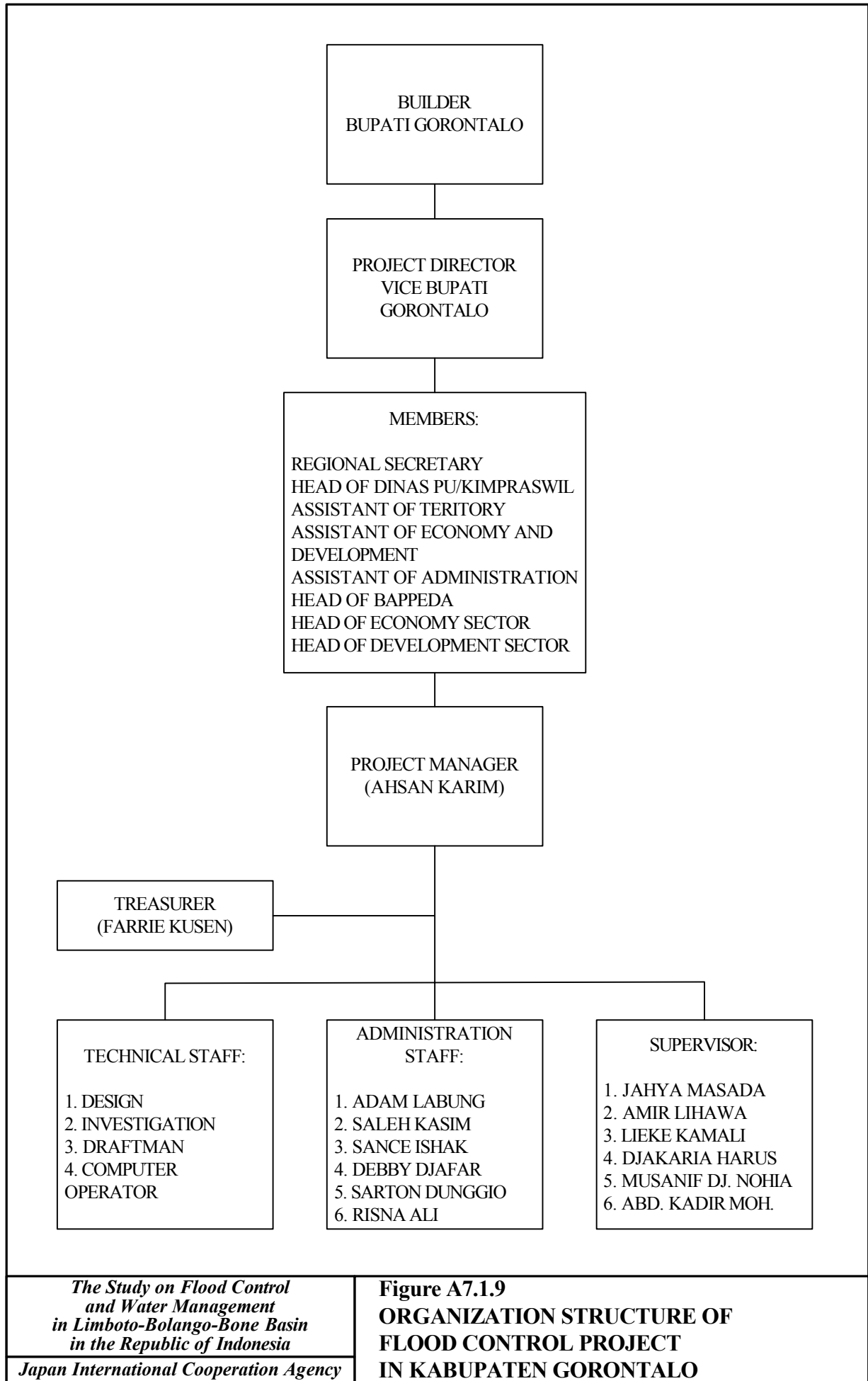
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Figure A7.1.7
ORGANIZATION OF DINAS PU
KOTA GORONTALO



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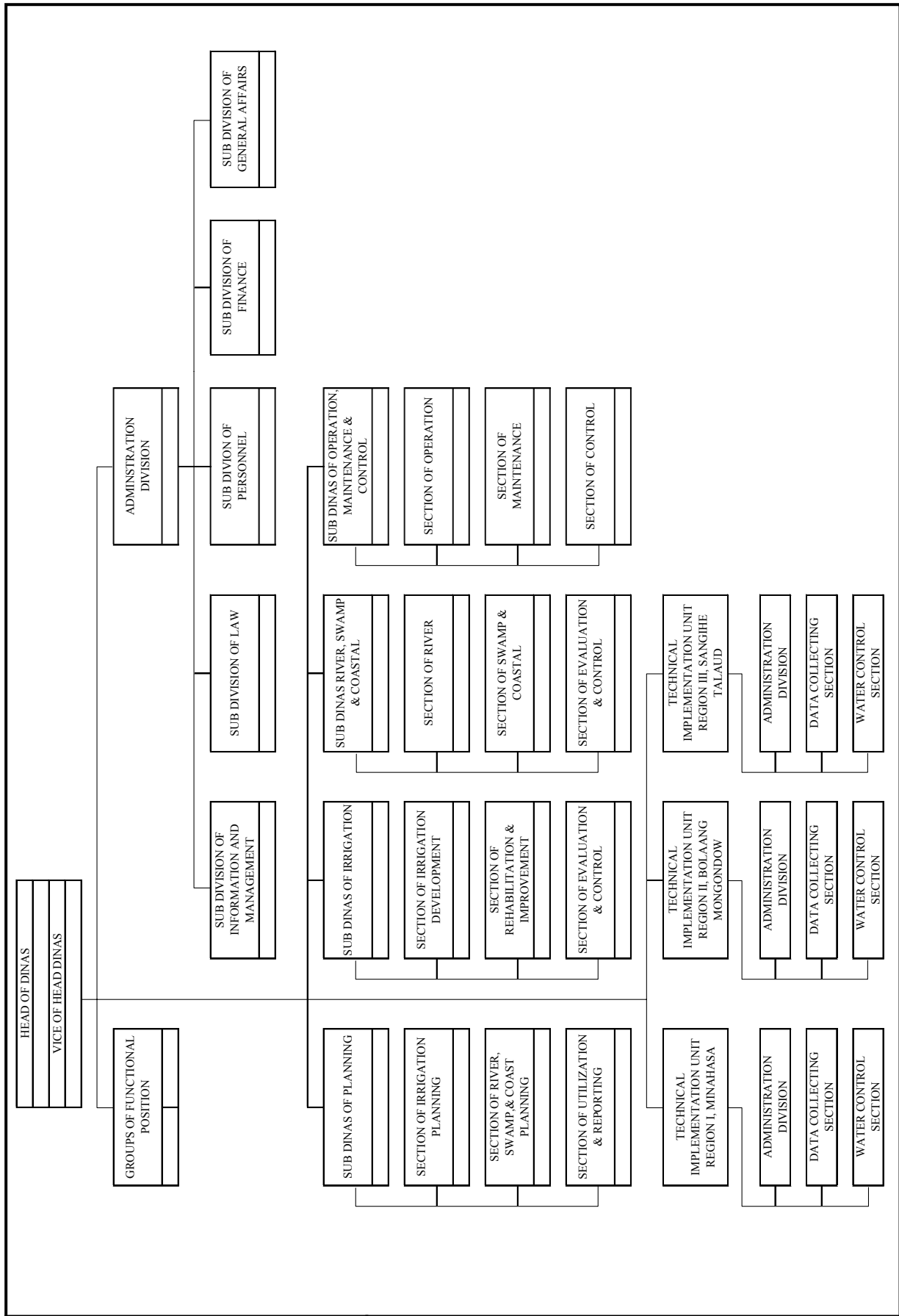
Figure A7.1.8
ORGANIZATION OF DINAS PU-PRASWIL
KABUPATEN GORONTALO



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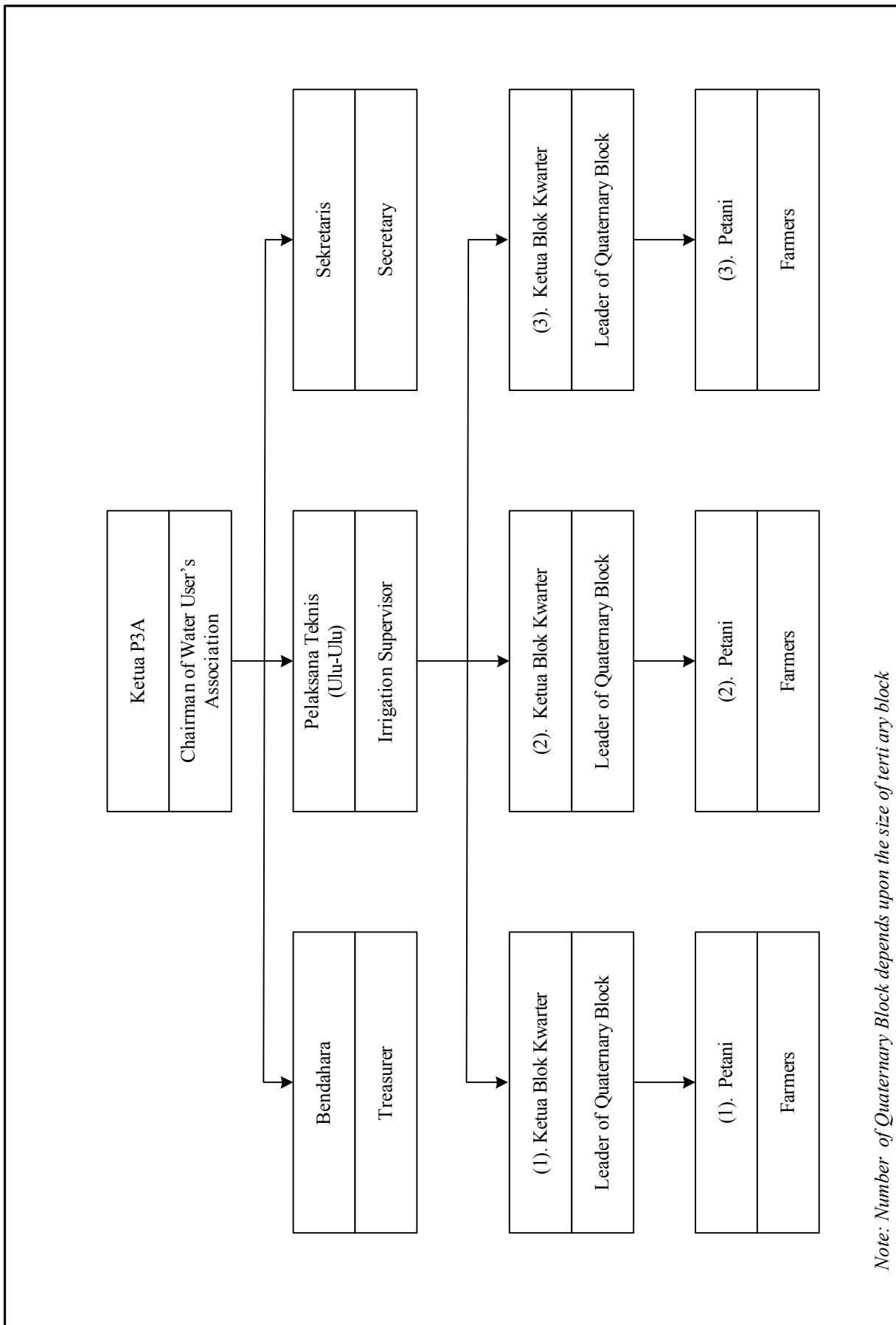
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**Figure A7.1.9
ORGANIZATION STRUCTURE OF
FLOOD CONTROL PROJECT
IN KABUPATEN GORONTALO**



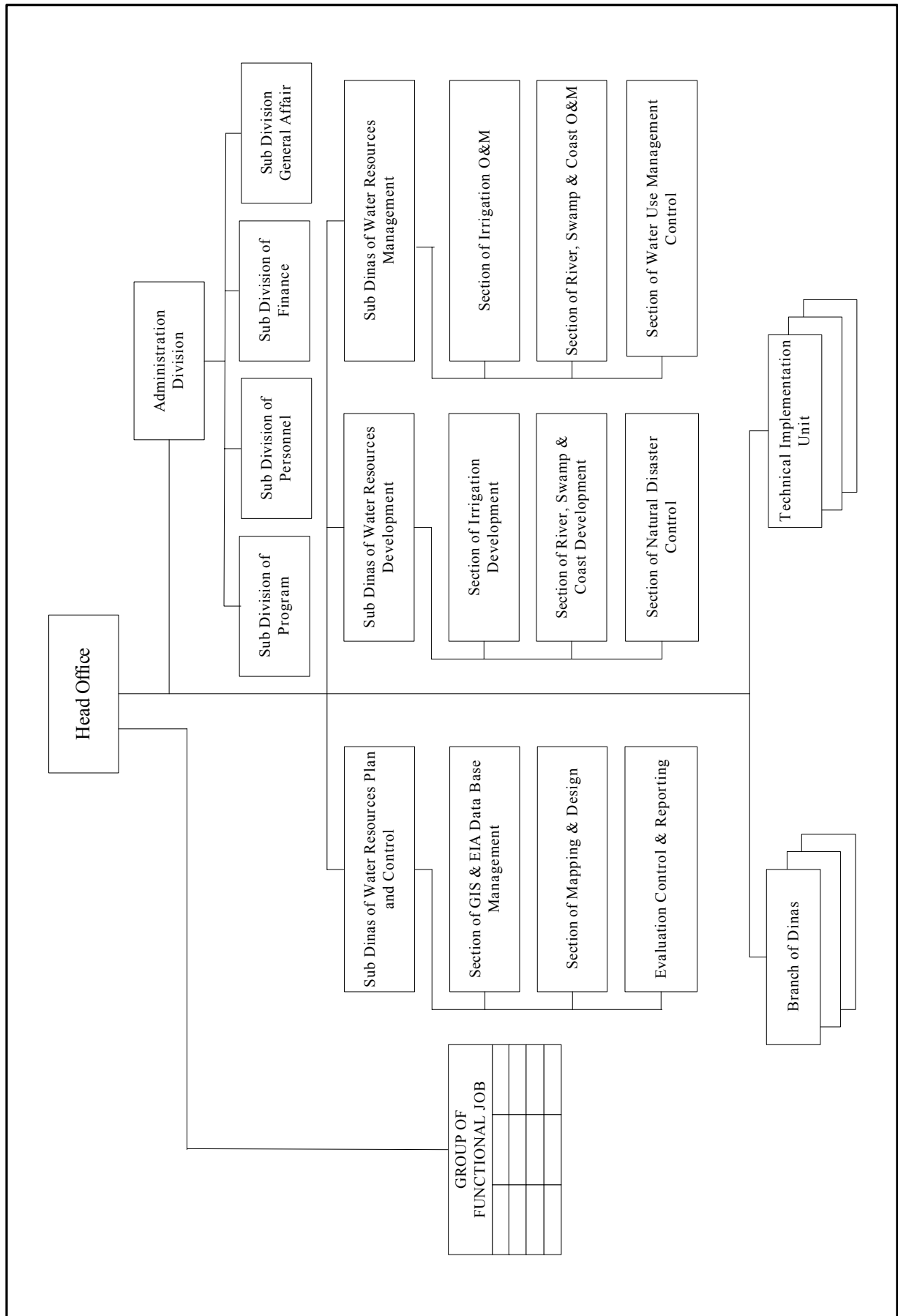
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Figure A7.1.10 ORGANIZATION OF DINAS SUMBER DAYA AIR, NORTH SULAWESI PROVINCE



Note: Number of Quaternary Block depends upon the size of tertiary block

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Figure A7.1.11 ORGANIZATION OF WATER USER'S ASSOCIATION (WUA)
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Figure A7.3.1
SUGGESTED ORGANIZATION OF DINAS SDA KABUPATEN / KOTA GORONTALO

A8. REVIEW OF PREVIOUS STUDIES AND PLANS

Various studies and works have been made previously in the LBB basin. These studies are outlined hereunder.

A8.1 LBB Basin Water Management Master Plan

Limboto-Bolango-Bone Basin Water Management Master Plan (WM-MP) was formulated in March, 1999 by Sub Dinas Pengairan, PU and the Canadian Executing Agency (CEA) through the North Sulawesi Water Resources Institutional Development Project (Proyek Pembinaan Pengairan Sulawesi Utara: P3SU Project:), a project funded by the Canadian International Development Agency (CIDA). The report and the Master Plan are referred to as the CIDA Report and the WM-MP in this report.

(1) Objectives

The WM-MP aims to 1) provide a central planning and coordination instrument for the application of an integrated approach to water management, 2) guide decision makers for the optimal management of the basin in support of the social and economic development, 3) present a group of viable water resources development schemes in support of the National and Provincial plans, and 4) formulate a phased development plan to exploit opportunities for single and multi-purpose water resources projects.

The Plan is addressed to the people of the LBB basin and is intended for the planning agencies and management authorities in the Province of North Sulawesi and the basin.

(2) Studies

Basin-wide studies were undertaken in 1993 and 1994 at the start of the planning process. In 1995/96, a set of water management issues were compiled based on information from initial studies, an analysis of trends, and the outputs of a public consultation meeting.

Plan components addressing the identified issues were prepared. Each component consists of a set of initiatives that are designed to meet the component objective. These components with their respective initiatives make up the WM-MP. National, provincial, and basin level plans were closely studied and referred to at each step of the

planning process to ensure that the plan is in keeping with stated Government policy.

(3) Water Management Issues

As a result of studies, the CIDA Report identified nine major water management issues as follows:

- 1) Inadequate institutional capacity,
- 2) Deforestation of Watersheds,
- 3) Water shortage for irrigation in West Limboto,
- 4) Flood hazard in Kota Gorontalo and Limboto,
- 5) Pressure on Lake Limboto,
- 6) Inadequate exploitation of irrigation infrastructure,
- 7) Limited access to safe drinking water of the rural population,
- 8) Unreliable urban water supply systems, and
- 9) Inadequate sanitation measures.

In order to cope with these issues, six objectives were identified and pursued as the components of the WM-MP. The initiatives for WM-MP are listed in Table A8.1.1 classified into following components:

- Component 1: Improve the institutional framework for water management,
- Component 2: Protect and conserve the water resources,
- Component 3: Improve the use of the Existing water infrastructure
- Component 4: Meet water requirement
- Component 5: Contribute to meeting energy requirement
- Component 6: Reduce urban and agricultural flood damage

A total of 29 initiatives are proposed to attain the component objective. The SDP (Sub Dinas Pengairan) of North Sulawesi Province proposed a five year action plan for Repelita VII from 1999/2000 to 2003/04, and 14 initiative indicated in the said Table were adopted for the five year action plan.

(4) Concerns with the FM-MP

The WM-MP covers widely water management issues including flood and sediment issues in its part. The WM-MP should be observed as a basic plan for the Flood

Mitigation Master Plan (FM-MP) under the present study.

Among 6 components of the WM-MP, Component 6 (Reduce Urban Flood Damage) has direct concerns to the FM-MP of the LBB basin. However, there are some other initiatives for other components to be adopted as alternative schemes or to be considered in planning the FM-MP.

Data and studies compiled in the CIDA Report are the invaluable source of basic data for the study of the FM-MP.

A8.2 Drainage Master Plan of Gorontalo City

Drainage Master Plan of Gorontalo City (Penyusunan Master Plan Drainase Kota Gorontalo) was prepared in December 2000, for Planning Board (Bappeda)/Kota Gorontalo, by PT. Palma Sejai, Manado. The study was conducted from September to December 2000.

(1) Objective

The study aims to provide clear guidelines to overcome drainage problems of Gorontalo City, its implementation stages, and cost estimate. The scope of the study covers:

- 1) Preparation such as data collection and problem analysis,
- 2) Formulation of Drainage Master Plan, and
- 3) Installation of survey bench marks at 10 places.

(2) Floods in Gorontalo City

Gorontalo City, especially Gorontalo Bawah is suffering from flood every years located in the flood prone area as shown in figure A8.2.1. The repeated floods happen due to the following reasons:

- 1) Low-lying flat lands almost of sea level;
- 2) Flood plains at the confluence of the Bone, Bolango and Tamalate rivers;
- 3) Area influenced by sea tides;
- 4) Sedimentation and narrow due to sand and others affects toward the Bone, and Bolango and Tamalate rivers; and

- 5) Lack of systematic overall plan for the drainage system of Gorontalo City.

(3) Division of Drainage Blocks

The urban area of Gorontalo City is divided into four major drainage blocks as follows:

- 1) Block I: Area located in the north of the Tamarate River bordered by the Primary Bolango canal (Primer Bolango Bagian Kanal).
- 2) Block II: Area between the Bone and Tamalate rivers
- 3) Block III: Area consisting of a part of Kelurahan Siendeng and Kelurahan Biawu around the Bolango River.
- 4) Block IV: Area consisting of Kelurahans of Talumolo, Leato, Leato Selatan and Botu.

(4) Drainage Master Plan

The drainage master plan proposes the drainage system to cover about 50% of the urban area of Gorontalo City within the time period of 20 years.

(5) Concerns with the FM-MP

The urban area of Gorontalo City is a part of the Study Area of the FM-MP and the drainage system and drained water under the Drainage Master Plan should be taken into account the study for the FM-MP.

Table A8.1.1 INITIATIVES FOR WATER MANAGEMENT MASTER PLAN(1/2)
(Cost in Million Rupiah)







Init. No.	Title of Initiative	Rationale	Capital Cost
COMPONENT 1: IMPROVE INSTITUTIONAL FRAMEWORK			
1 fa	Water Management Institutions	Attention is required at Provincial, Kabupaten and field levels.	1,000
2 fa	River Basin Water Resources Committee (PPTPA)	The Committee is urgently needed to guide basin development. Decree needed from Governor for formation of PPTPA committee. PTPA committee already operational.	200
COMPONENT 2: PROTECT AND CONSERVE WATER RESOURCES			
3 f	Environment Management	Immediate attention required to address environmental problems in the upper basin and waste management options in the lowlands.	2,400
4 f	Upper and Middle Watershed Rehabilitation	Rehabilitation has started. Attention is needed to speed up reforestation, greening, and stabilization of agricultural practices.	45,000
5 fa	Sediment Monitoring	Work has started. Further work is required to clearly establish rates of sediment deposition in Lake Limboto and irrigation systems.	4,677
6 fa	Lake Limboto Management Plan	Updating of the Lake Limboto Management Plan is needed to guide lake development in a sustainable manner.	975
7 f	Demarcation of Lake Limboto Buffer Zone	Forming a buffer zone is a high priority of the Local Government to control development around the lake.	4,130
8 f	Regulation of Lake Limboto Water Levels	A gated control structure is needed for lake management and flood mitigation.	10,661
9 f	Dredging of Lake Limboto	A pilot maintenance dredging program is proposed for two small areas of Lake Limboto.	175
10	Fisheries Development	A fishery management program is required to improve open water fisheries and control cage culture.	3,445
11	Sanitation Measures	Attention in needed to monitor effluents and groundwater quality. Improved sanitation should be a part of urban development	33,000
COMPONENT 3: IMPROVE USE OF EXISTING WATER RESOURCES INFRASTRUCTURE			
12	O&M Improvement of Rural Water Supply Infrastructure	The creation of user groups is needed as part of the program to improve domestic rural water supply.	510
13	O&M Improvement of Piped Water Supply Systems	Creation of financially autonomous systems are needed as part of the program for essential urban services.	800
14 a	O&M Improvement of Irrigation and Drainage Systems	Work to improve the O&M of the irrigation systems is ongoing. Further work is required.	N/A

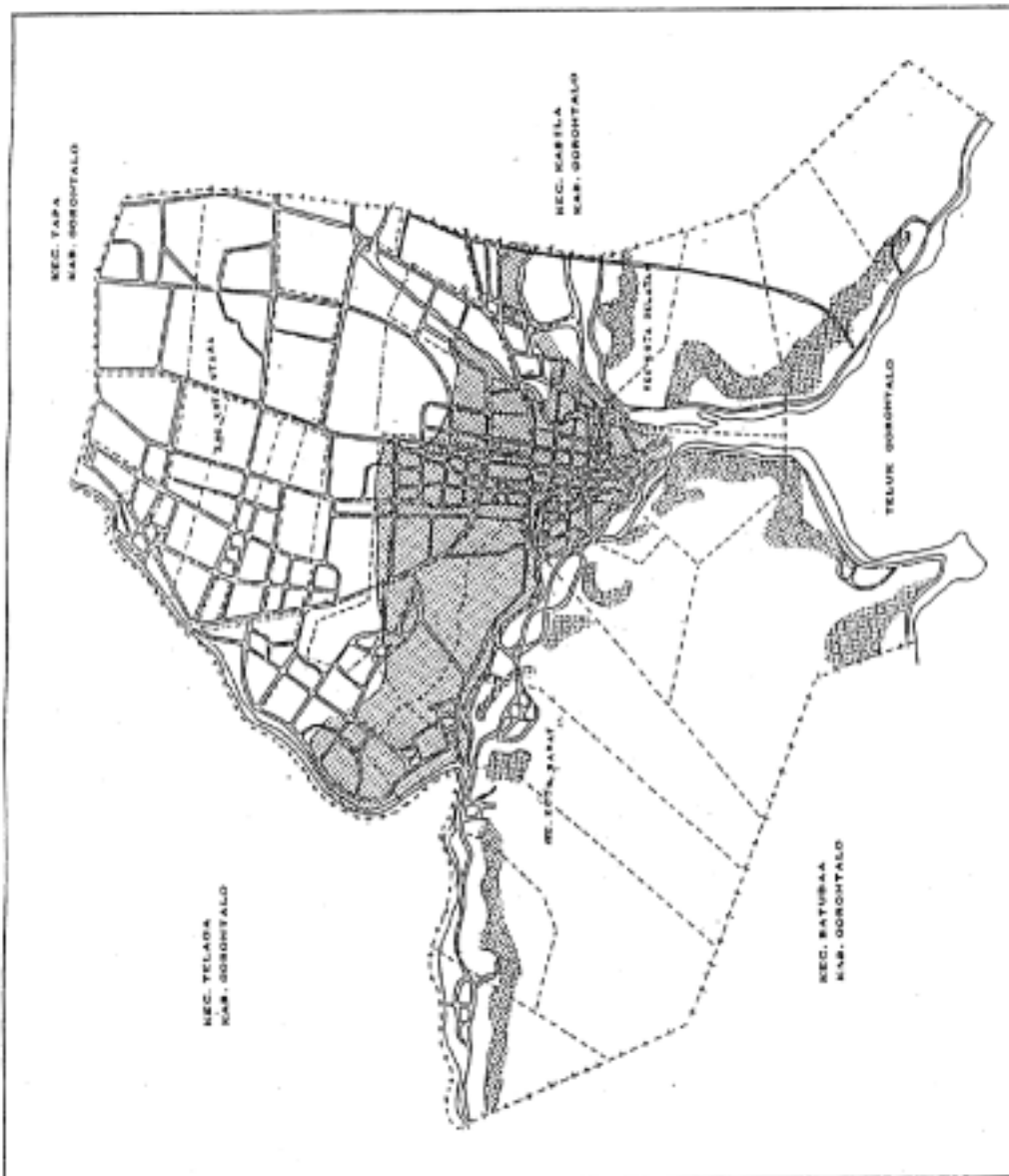
Source: Limboto-Bolanbo-Bone Basin Water Management Master Plan, March 1999, CIDA
(Note) f. Initiative concerning FM-MP, a: Initiative selected as 5-year Action Plan by SDP

Table A8.1.1 INITIATIVES FOR WATER MANAGEMENT MASTER PLAN(2/2)

COMPONENT 3: IMPROVE USE OF EXISTING WATER RESOURCES INFRASTRUCTURE			
15	Agricultural Diversification	There is insufficient water to grow rice on the entire command area in Limboto. The cultivation and marketing of less water consuming crops should be considered.	1,000
16 fa	R&U of Irrigation and Drainage Development	Immediate action is required to improve drainage facilities and to protect crops against flood damage	32,454
17 a	Development of Village Irrigation Schemes	Work is ongoing to update existing schemes and this program should continue.	2,267
COMPONENT 4: MEET WATER REQUIREMENTS			
18	Improvement of Rural Water Supply Systems	Much of the rural population does not have access to safe drinking water. New and upgraded water supply systems are needed.	975
19	Gorontalo City Domestic and Industrial Water Supply	An expanded and reliable water supply is an essential service for Gorontalo City.	31,500
20	Limboto City Domestic and Industrial Water Supply	An expanded and reliable water supply is an essential service for Limboto City	3,150
21	Bone River to West Limboto Diversion Canal	Present water supplies are not sufficient for West Limboto irrigation systems. Integrated irrigation/flood control studies (including Toheti-Dehua scheme) are needed as the next step to identify which scheme is most attractive for implementation.	158,695
22 f	Kayu Merah Multi-Purpose Reservoir	The project is economically marginal but warrants further study.	44,528
23 f	Toheti-Dehua Multi-Purpose Reservoir	The project is economically attractive and helps mitigate Gorontalo city flooding and provide irrigation water. It should be part of integrated irrigation/flood control studies.	269,925
24	Groundwater Development	Further monitoring and assessment is required to make best use of groundwater for domestic purposes.	768
COMPONENT 5: CONTRIBUTE TO MEETING ENERGY REQUIREMENT			
25	Dumbaya Bulan Hydropower Development	The demand for electric power is increasing in Kotamadya Gorontalo and other areas. PLN have scheduled further studies for 1999/2000.	356,200
COMPONENT 6: REDUCE URBAN FLOOD DAMAGE			
26 fa	Gorontalo City Flood Plan	Immediate action is required to reduce the severe flooding in Kotamadya Gorontalo	36,276
27 fa	Limboto City Flood Plan	Flooding occurs frequently but is not severe. The Flood Plan includes drainage improvements.	6,845
28 fa	Agricultural Flood Control	Annual flooding causes extensive agricultural damage. Comprehensive studies are initially needed to prepare a Flood Mitigation Plan.	13,950
OTHER			
29 a	Development of Coastal Engineering Works	Protection of Coastal roads and settlements, and monitoring of sediment and harbour improvements are required.	15,100

Source: Limboto-Bolanbo-Bone Basin Water Management Master Plan, March 1999, CIDA
 (Note) f: Initiative concerning FM-MP, a: Initiative selected as 5-year Action Plan by SDP

 PEMERINTAH DAERAH KOTA GORONTALO	
PROYEK PENYUSUNAN MASTER PLAN DRAINASE DAN PAMAS BUNAIROBOTU KOTA GORONTALO TAHUN ANGGARAN 2000	
PEKERJAAN I SEBATHASE MASTER PLAN DRAINASE KOTA GORONTALO	
KETERANGAN :	
	BATAS KOTA
	BATAS KECAMATAN
	BATAS KELURAHAN
	KAWASAN BAHUJIR KAWASAN LONDEOR
SUMBER : BUREAU WILAYAH KODYA GORONTALO 2000	
 PT. PALHA SEJATI GENERAL CONSULTANT ENGINEERING Jl. Pongkor Malindang No. 147 MAMBALE	
GAMBAR : KAWASAN BAHUJIR BONGGARA DI KOTA GORONTALO	
NOMOR GAMBAR	SKALA
8-5	1:10
HALAMAN	
11-19	



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**Figure A8.2.1
FLOOD AND LAND SLIDE SURRENDERING
AREAS IN GORONTALO CITY**