

# **PROPERTY MANAGEMENT INFORMATION SYSTEM**

**A Major Project  
Present to the Faculty of  
Computer Studies Division  
Ateneo de Davao University  
Davao City**

**In Partial Fulfillment  
Of the Requirement for the Degree of  
Bachelor of Science in Information System**

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**March 2013**

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# Chapter I

## Information Systems Assessment and Framework (ISAF)

### 1. Organizational Profile

#### 1.1 Legal Mandate

Davao's first water supply system was established in 1921 which was then known as the Sales Waterworks System. The said communal system tapped Malagos Creek and laid 28 kilometers of pipelines to serve some 10,000 users at the Davao poblacion area.

After the Second World War, Davao City's water demand increased proportionately to the growing population such that Ma-a spring was developed to increase volume and meet the demand. By 1955, a law enacted by Congress placed all municipal waterworks under the jurisdiction of the National Waterworks and Sewerage Administration (NAWASA). During this period better water facilities were constructed.

In the 1960s, the local governments gained control over the waterworks. Davao City paid Php300,000 to the three Davao provinces to gain absolute ownership of the water system, which became known as the Davao Metropolitan Waterworks.

In 1973, Davao City Water District (DCWD) was created and began serving Davao City making it one of the first water districts to operate in the country by virtue of Presidential Decree 198 or the Provincial Water Utilities Act of 1973. Operating as a quasi-public corporation or a semi-government status, DCWD implemented its projects by stages.

From 1975 to 1979, the Phase I Project was undertaken. Several facilities were constructed including production wells, sump and reservoir, which form part of DCWD's biggest water supply system today – Dumoy. Sometime in 1986 and 1988, the Phase II Project (Stages I and II) was carried out. After the completion of said stages, more production wells, booster pumps, and transmission and distribution lines were in place, including one additional sump and the Ma-a tunnel.

In 1992, the Supreme Court declared with finality that all water districts in the country are government-owned and controlled corporations (GOCCs). Despite this ruling, DCWD forged ahead with its plans to further improve the city's water system. Thus, production wells, reservoirs, and transmission and distribution lines, altogether forming a water supply system, multiplied and provided water service to over 100,000 service connections. This earned DCWD the coveted "Most Outstanding Water District" award for the Very Large Category for two consecutive years, 1995 and 1996. The same feat was repeated in 2001 and 2002 after the partial completion of the Phase III Project, which was started in 2000.

Today, DCWD continuously upgrades and finds resources, whether underground or surface water, to ensure that abundant and only quality water supply will flow out of the taps of Davao City for many more years ahead.

## **1.2 Vision and Mission Statements**

### **Mission**

We commit to supply potable and affordable water twenty-four hours a day, deliver reliable service, operate efficiently, and take a proactive stance in environmental concerns.

### **Vision**

To be the best and most efficient water utility in Asia, providing quality water at reasonable cost and excellence service, satisfying its customers, employees and the community, and ensuring water resource sustainability.

### **Corporate Philosophy**

Service with Dignity and Honor.

## **1.3 Strategic Thrusts and Programs**

### **Strategic Thrusts:**

DCWD's operational direction is focused on its five core challenges collectively known as the "NICER agenda", which stands for Non-revenue Water Reduction, Infrastructure Development, Customer Satisfaction, Environmental Protection, and Resource Management.

### **Non-revenue Water Reduction**

To reduce and control water losses.

### **Infrastructure Development**

To expand/improve service coverage, provide 24 hours water supply and enhance water quality.

### **Customer Satisfaction**

To ensure prompt and efficient service to both internal and external customers.

### **Environmental Protection**

To preserve and protect vital water resources.

### **Resource Management**

To effectively manage sources particularly personnel, money, technology, materials and equipment.

### **Programs:**

DCWD has always been keen on the well-being of the communities inside and outside its served areas. This is strongly manifested through the various initiatives that encompass its corporate social responsibility (CSR).

### **Supporting Davao's Brightest Students**

Since 1993, the utility has been granting academic scholarships to bright but underprivileged youth. These scholars are enrolled at the University of Southeastern Philippines (USEP), Obrero campus taking up engineering and technology courses. As of

2011, more than 20 scholars had successfully completed their engineering courses. In 2005, DCWD also launched the grant of tribal scholarships to youth belonging to the indigenous communities. These scholars are enrolled at USEP-Mintal Campus taking up business and public administration and agriculture courses. All scholars are recommended by the National Commission for Indigenous Peoples (NCIP).

### **Educational Assistance in Watershed Communities**

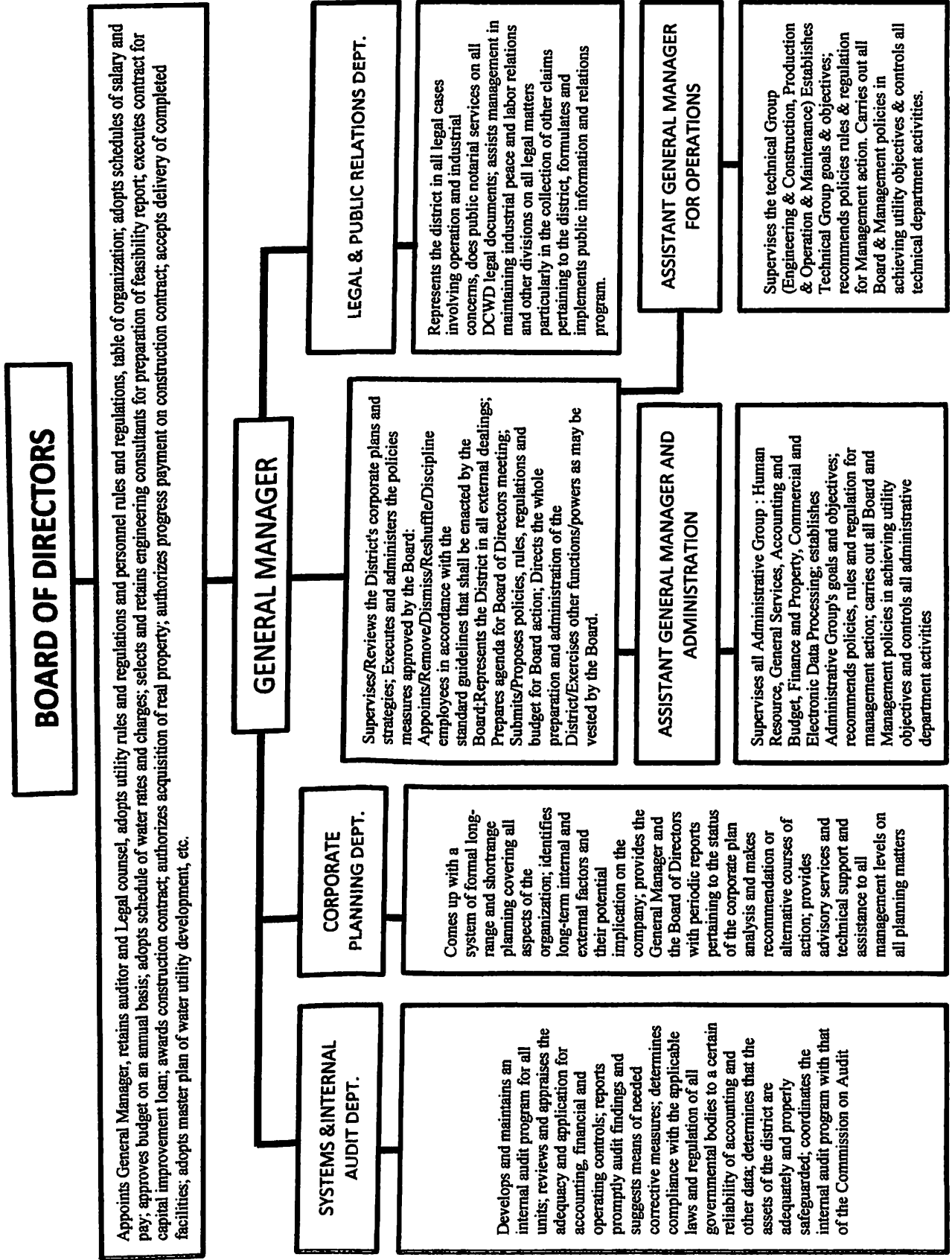
To ensure abundant and sustainable water supply, the water district has long been protecting and preserving the three most important watershed areas in Davao City, namely, Malagos, Mt. Talomo-Lipadas, and Tipolog-Tamugan Watersheds. In this endeavor, DCWD has teamed up with various People's Organizations (POs) in the said watershed areas for the effective implementation of community-based watershed related endeavors. Annually, the utility implements an educational assistance program through distribution of basic school supplies such as bags, notebooks, and raincoats to POs' children. Part of the program is conducting lectures on Environmental Awareness and the Rights of the Child. As of 2011, about 3,700 school children in the watershed communities have benefited from the project.

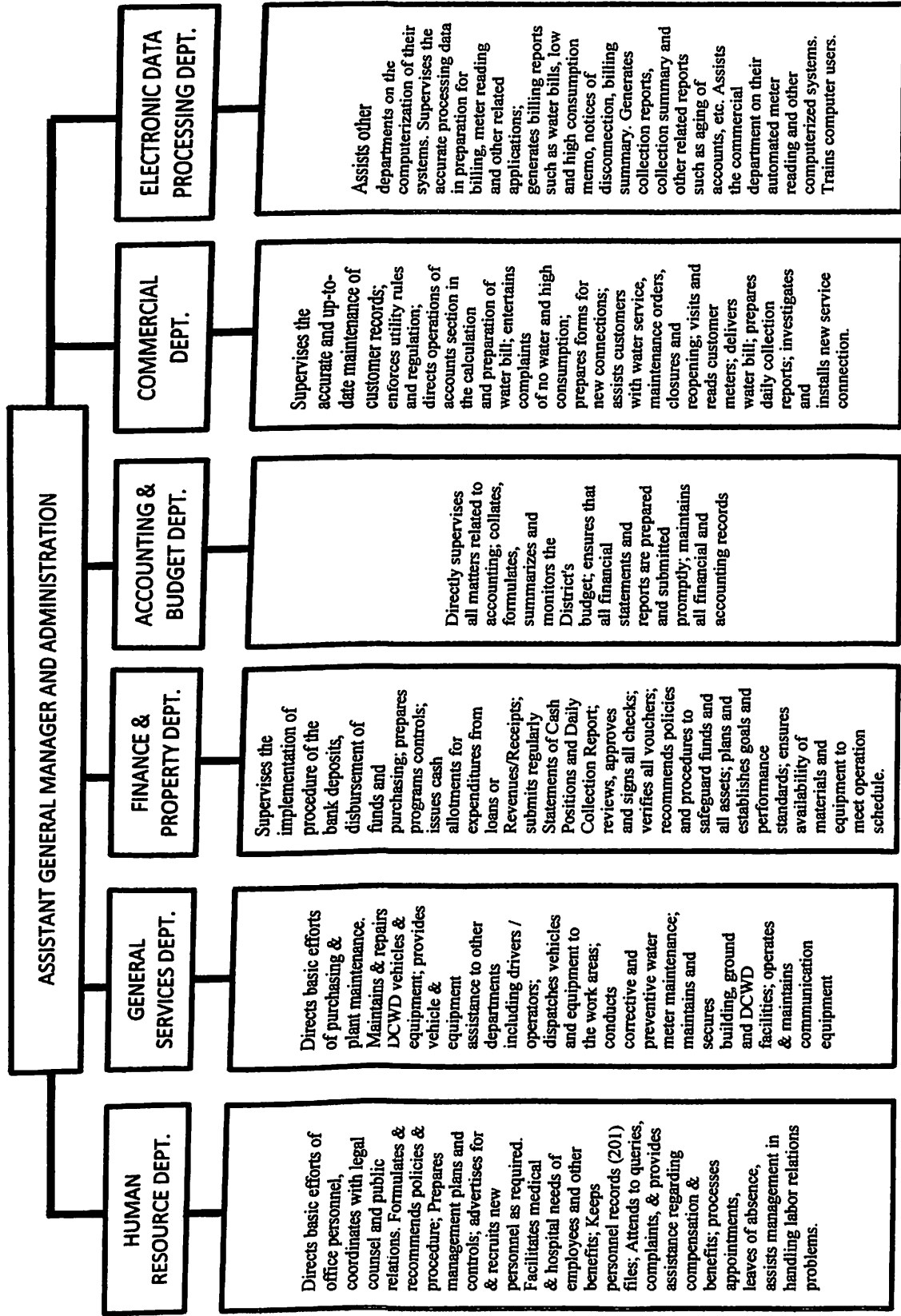
### **Improving Lives through Health and Wellness**

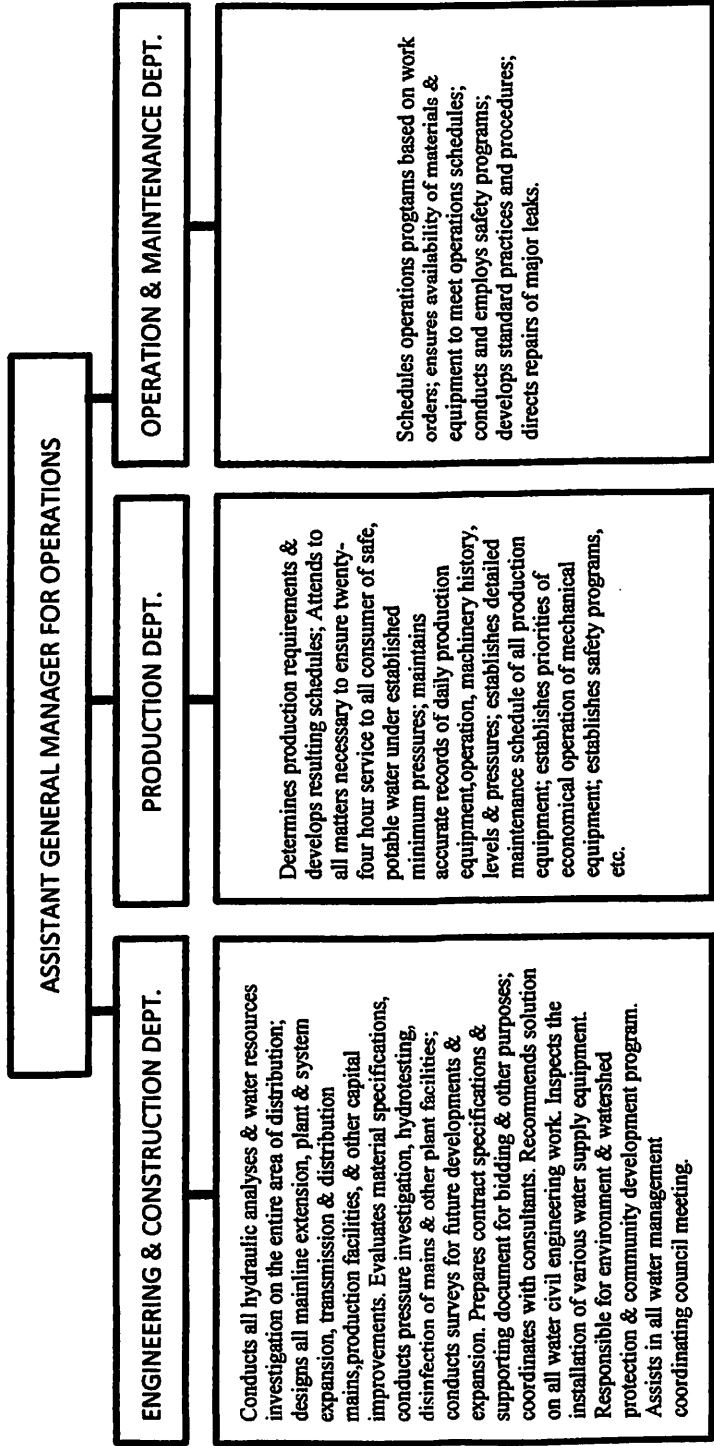
In keeping with its corporate social agenda, DCWD launched its Free Medical and Dental Clinic Program during its 30th anniversary celebration. Annually, this program is carried out around the barangays of Mt. Talomo-Lipadas, Malagos, and Mt. Tipolog-Tamugan Watersheds, in cooperation with the different medical team volunteers,

local government and the private sector. As of 2010, about 6,000 residents of Tungkalan, Daliaon Plantation, Manuel Guianga, Malagos, Tambobong and the surrounding communities have availed of the various services offered, such as oral health care and dental services, medical clinics and circumcision, all free of charge. This coming November 2011, the utility will be re-conducting the said activity to continue promoting health and wellness.

# 1.4 The DCWD Functional Chart

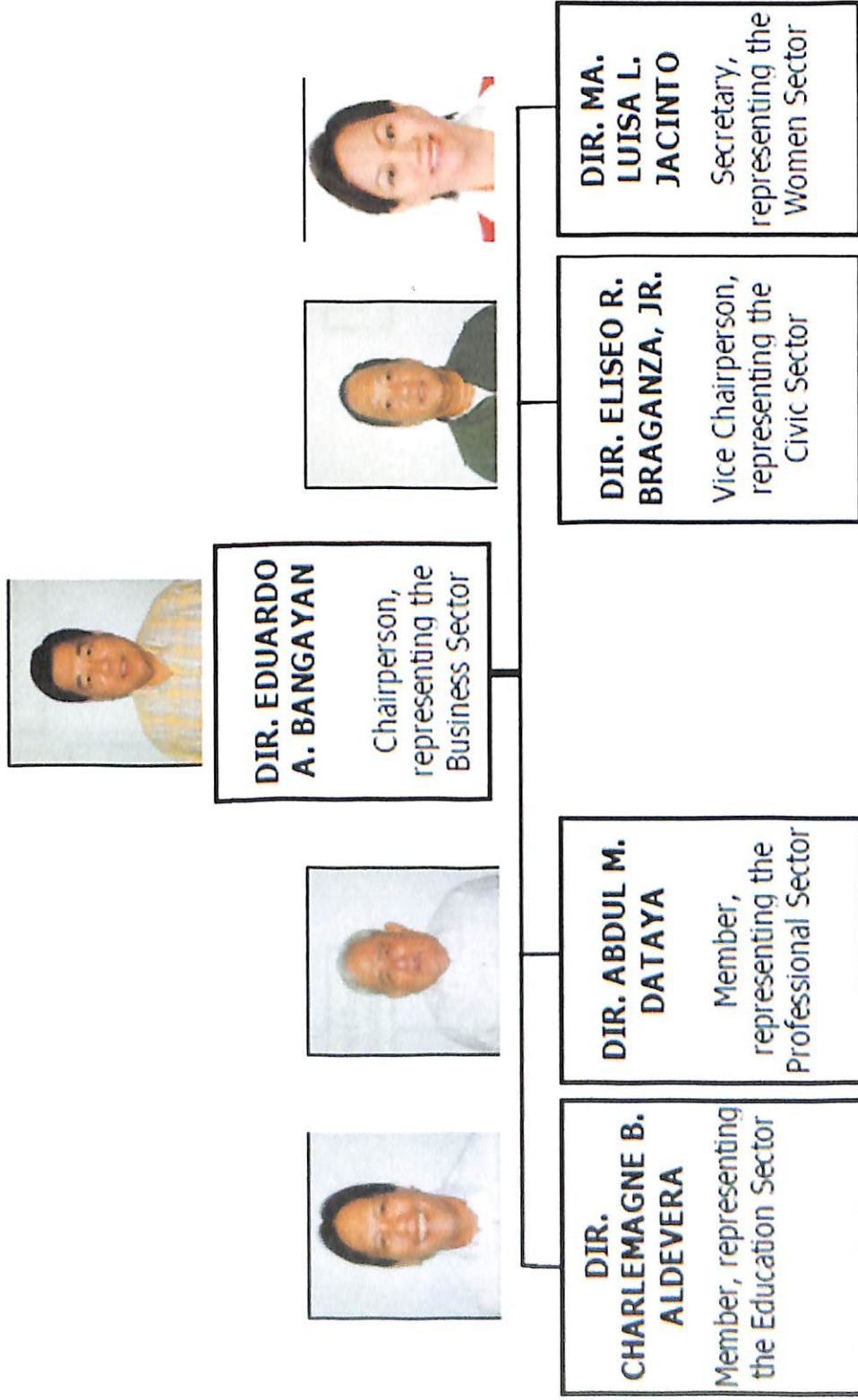




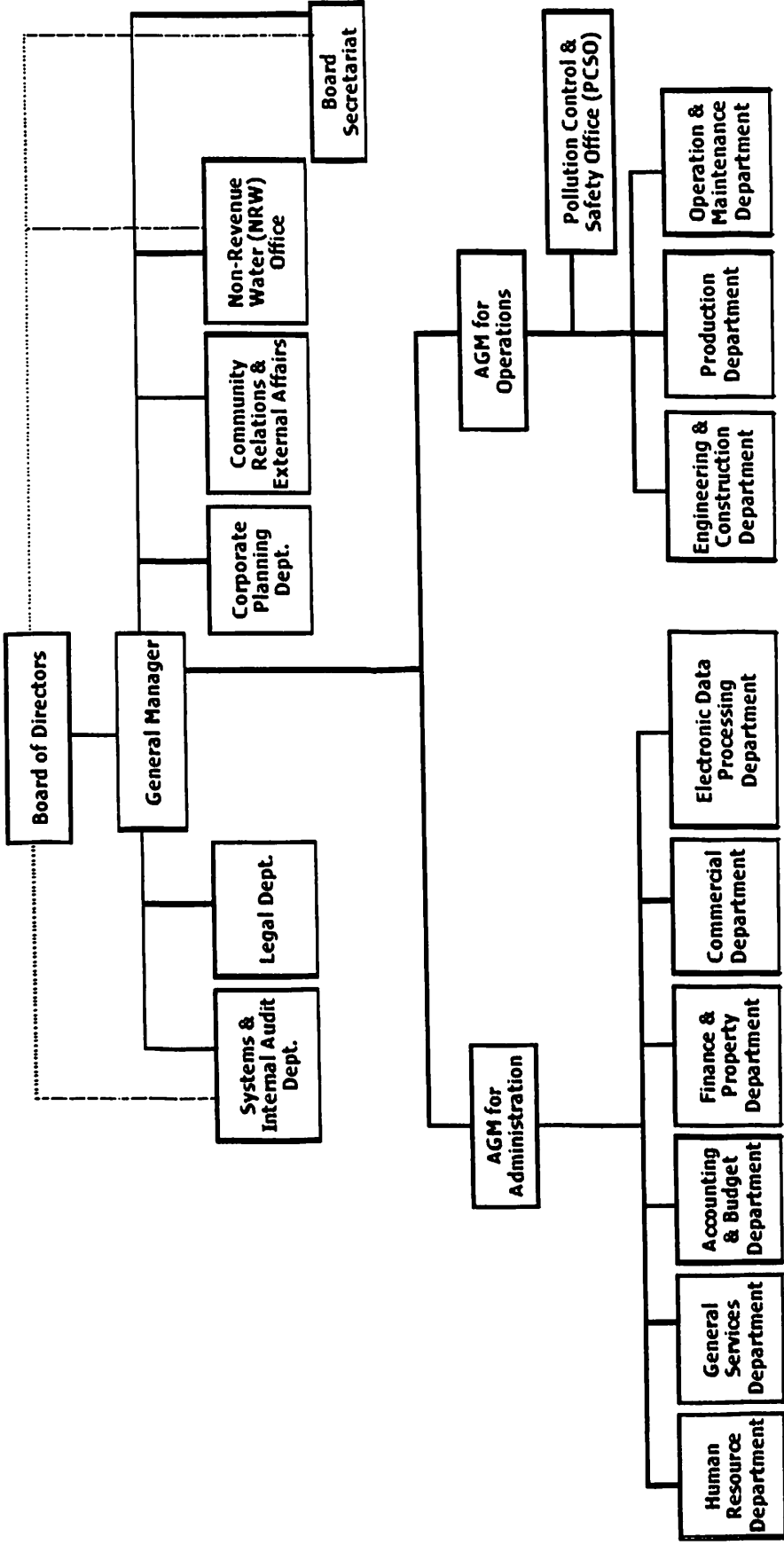


**DAVAO CITY WATER DISTRICT**

**THE BOARD OF DIRECTORS**



# 1.5 The DCWD Organizational Chart



## **2. Capturing the Current System**

### **2.1 Events List**

#### **Customer**

1. Customer submits requirements for new service connection application
2. Customer requests for allowable partial payment(if paying in partial amount)
3. Customer requests for replacement of stolen meter
4. Customer files complaint on high consumption
5. Customer requests for leak adjustment
6. Customer requests for disconnection
7. Customer requests for change of account name
8. Customer requests for reconnection
9. Customer requests for transfer meter

#### **Banco De Oro (BDO)**

10. BDO submits collection report

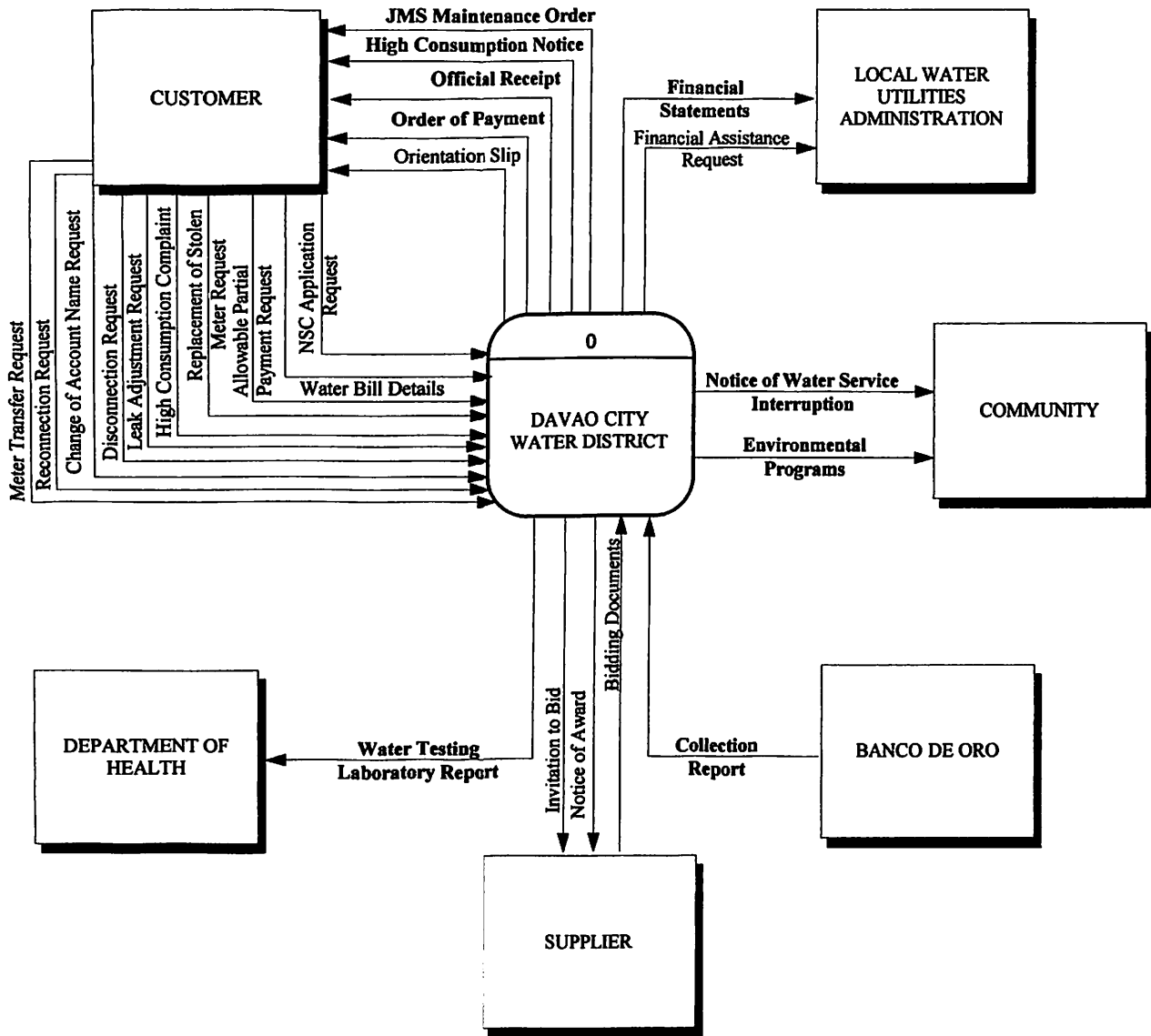
#### **Suppliers**

11. Supplier submits Bidding Documents

## **DCWD Main Office**

12. DCWD submits financial statements to LWUA
13. DCWD submits water testing laboratory report to DOH
14. DCWD conducts environmental programs to the community
15. DCWD submits notice of water service interruption to the community
16. DCWD submits Notice of Award to suppliers

## 2.2 Context Diagram



## 2.3 Functional Decompositions (DFDs)

Diagram 0

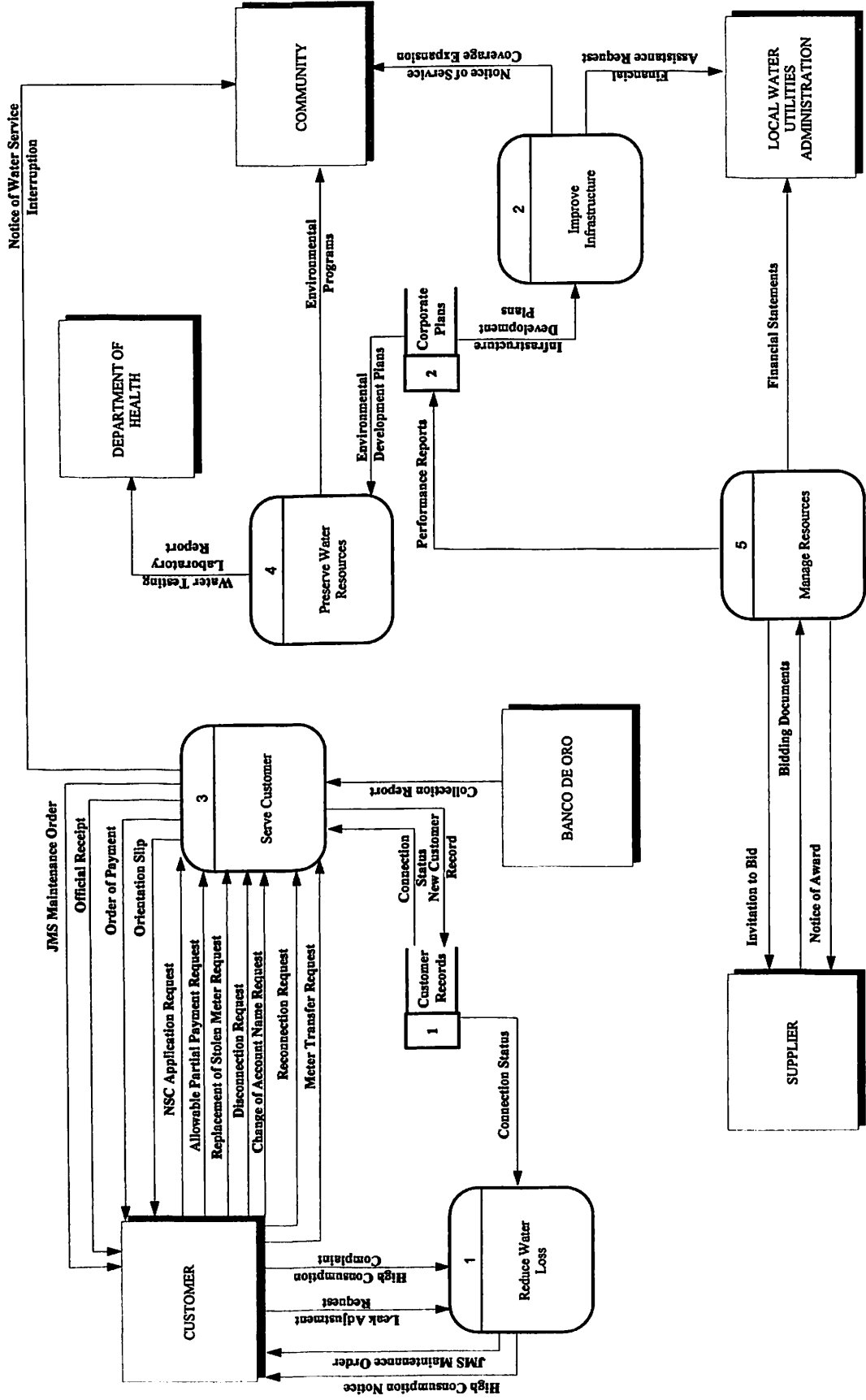


Diagram 3

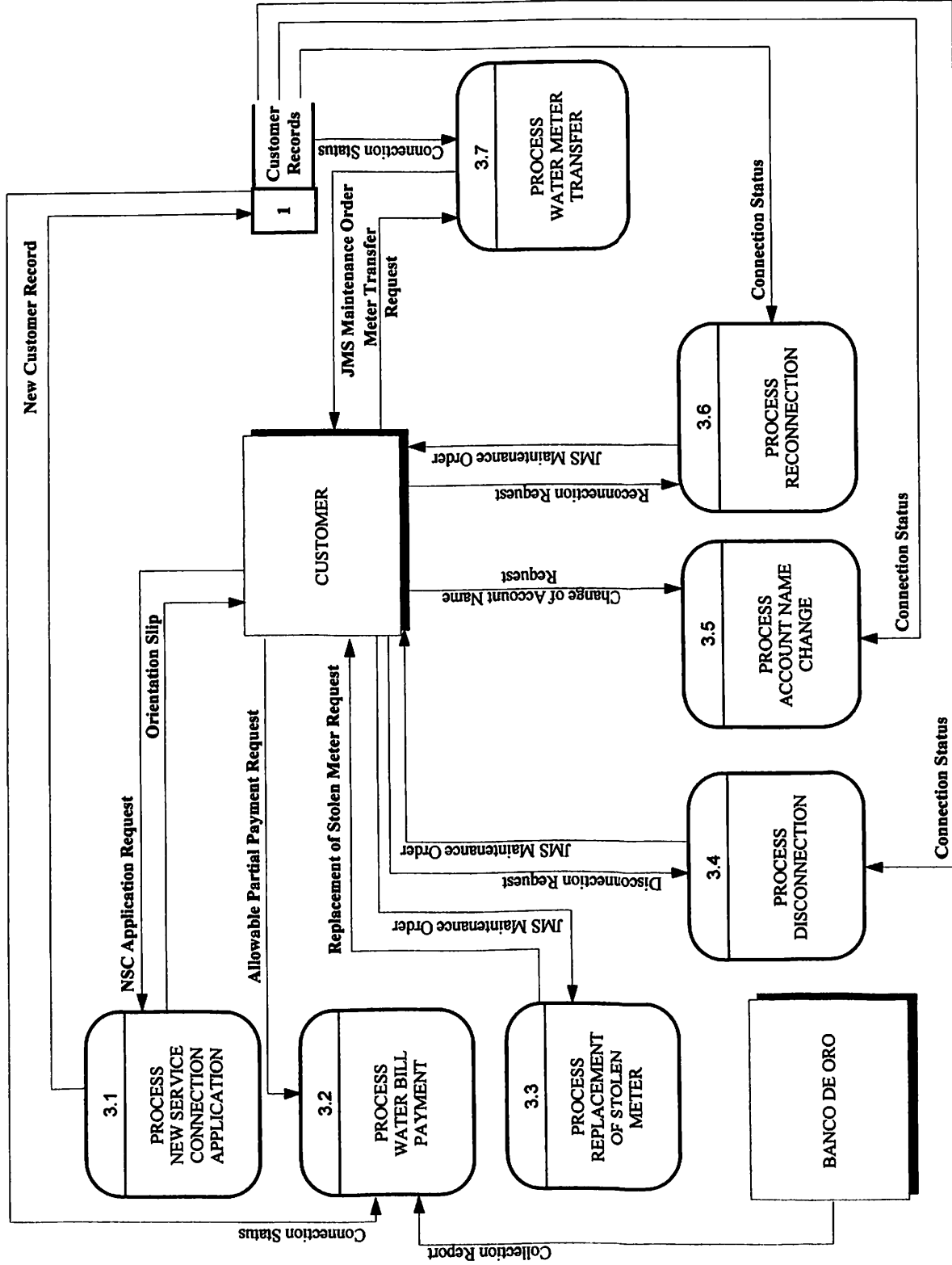
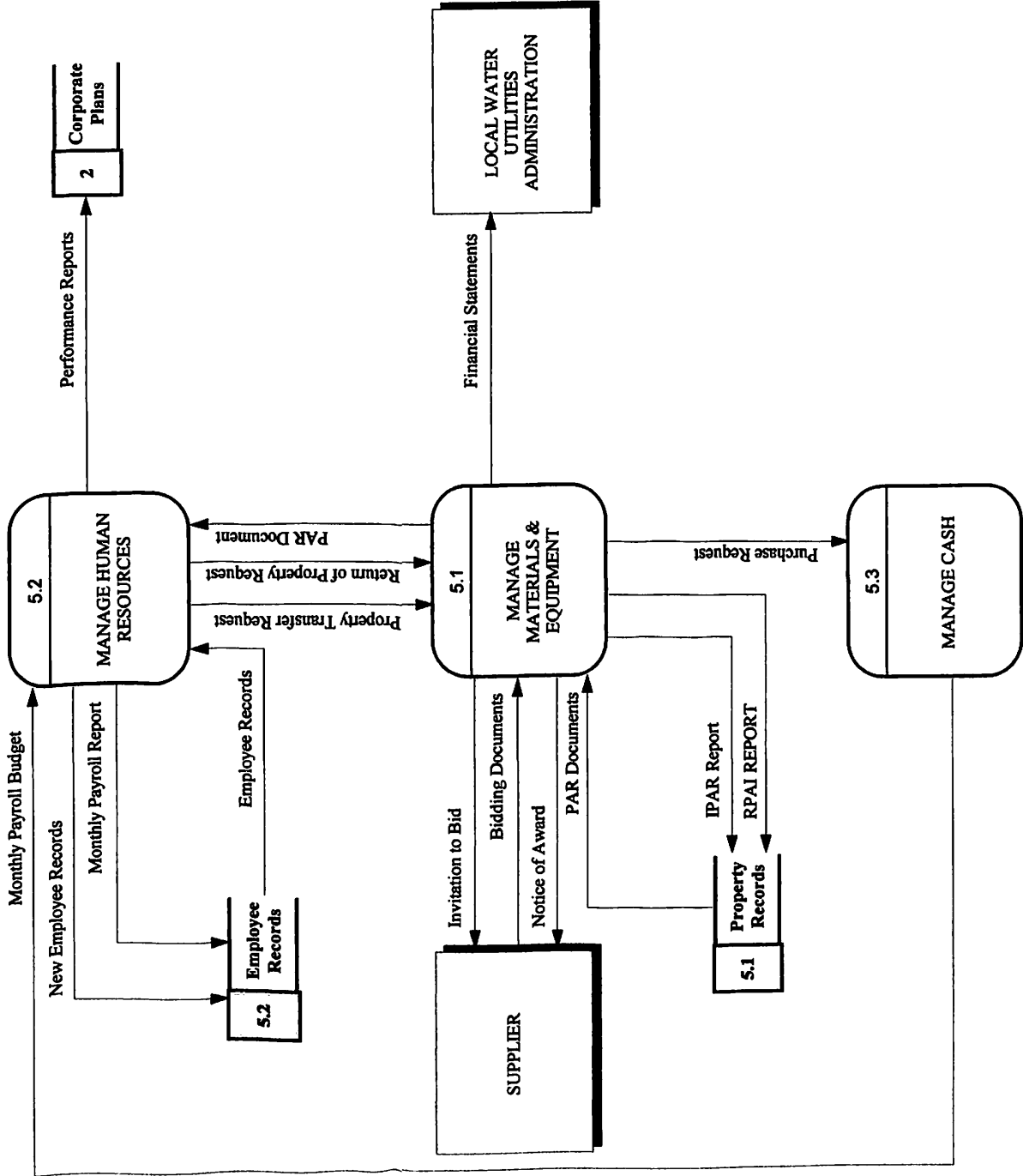


Diagram 5



### **3. Present ICT Situation or Strategic Challenges**

#### **3.1 Computerization level of:**

##### **3.1.1 Mission critical or frontline services**

As a utility providing water services, DCWD endeavors to efficiently deliver its five (5) frontline services:

1. Application for new service connection
2. Payment of water bills
3. Customer assistance
4. Reconnection of water service
5. Transfer of water meter

Each service has its own procedures to follow. Customers are asked to fill-up and sign forms or documents which include contracts or agreements. These forms are kept by the management for future reference while basic information such as personal information of the customers are encoded in the system for easy access in billing and collection of payments.

##### **3.1.2 Office automation**

Part of achieving and sustaining excellent customer service, DCWD's officers and employees commit to a service pledge. DCWD's EDP Department developed systems that will help them in providing customers with a positive and helpful experience when they enter the utility's premises, throughout the time

they are conducting business, and even after the business is concluded. The Billing and Collection System is one of the systems developed, which represents the many systems that manage the accounts of a customer from installation, meter reading, payment collection, and special requests to disconnection.

Aside from developing systems for excellent service to customers, EDP Department also developed systems that will help employees do their internal jobs efficiently such as Human Resource Information System (HRIS) of which all information and processes an employee undergoes from acceptance and attendance to retirement are incorporated here including Payroll. Other systems that contribute to the day-to-day operations of the company are Stock Inventory System, Procurement System, Vehicle Equipment Monitoring System, Accounting System, and Geographical Information System.

In creating reports, some reports are part of the existing systems and are system generated, but some individual reports are encoded manually by the employees using Microsoft Office and OpenOffice Applications for word processing, spreadsheet, and presentations.

### **3.1.3 Web presence**

Through the great efforts of DCWD's EDP Department in bringing about improvements in customer service, they have established their own web server and website. DCWD's official website, <http://www.davao-water.gov.ph/web/>, allows the customers to view and compute their water bill, and report leaks

online. They are currently planning to improve and add additional functionalities to the website to allow user interactions, such as online application for new connection, reconnection and disconnection, and online payments of water bills.

### **3.2 Extent of ICT use:**

DCWD currently has 1,050 employees, 384 of which are doing office work and 632 are doing field work. Most of their employees are working full-time and some are contractual.

#### **3.2.1 Computer literacy**

Not all of the employees' jobs require the use of computers, especially field work, but most of its employees are computer literate. If there is a need for an employee to use a computer, he/she is taught by the management on how to use it.

#### **3.2.2 Computer ratio**

Under DCWD's EDP Department, the employees' computer ratio is 1:1. On other departments, only those employees who have jobs that require computers have their own computer and shares them with other employees who, occasionally, create reports.

## **4. Strategic Concerns for ICT Use**

### **4.1 Intended adoption of ICT in priority areas where high impact can be attained**

Davao Water District composes of different information systems to support their business transactions internally and externally. Internal information systems include Procurement System, Human Resource Information System and Accounting System. These internal or back-end systems help and aid employees in processing transactions and operations 'behind-the-scene' with which the customer rarely comes in contact. On the other hand, front-line services include the Billing and Collection System, Job Monitoring System and the Meter Reading System. These systems include the customers and external factors such as the suppliers as part of the transactions. Regardless of back-end or front-end, both of these system groups report all their outputs in a single managerial and central database they call as the Document Management System which all employees could easily access. On the other hand, supervision systems like Document Tracking System, Inventory System, Geographical Information System, and Vehicle Monitoring System don't report back to the Document Management System. These supervision systems are independent to each other and to every system. Thus, these systems store all their outputs and reports to their respective and individual databases.

The Davao Water District plans to achieve a property asset management. This project concerns their assets to be assigned and accounted to each of their employees. With this system, the company can track their assets as well as employ the responsibility to their employees. This system can record all the company's asset purchases and assign

it to their employees. In addition, the company can compute and record their costs as well as the useful life of each asset or item.

The property asset management is divided into two accountability types, the IPAR and the ISC. The IPAR, Individual Property Accountability Report, assigns an asset to a particular employee. With this system, all property and asset assigned to that employee could easily be shown and supervised. The second type, ICS, concerns property and asset assignment for a project which will be assigned to an employee. The difference between the two is that the IPAR is concerned on an individual accountability and use. On the other hand, the ICS is concerned about the use of properties and assets to the whole project, but will be accounted by an individual employee. With these, IPAR and ICS constitute the company's plan to their property asset management.

In addition, minor business functions include customer-management relationship system. This system includes online payment system and leak reporting and feedback system. The online payment system allows customers to pay their bills on their official webpage. This could affect the customers as it will increase comfort and ease. This was proposed but is still on progress until today. On the other hand, leak reporting and feedback system is focused on the concerns of the customers for problems in water connection, billing, and services. The company would like to propose a leak feedback system that could provide their customers with ease in connection as well as provide free services for them.

#### 4.2 Major Functions, Business Operations, Barriers/Obstacles, Intended ICT Solutions

<b>Major Functions</b>	<b>Business Operations</b>	<b>Barriers/Obstacles</b>	<b>Intended ICT Solutions</b>
<b>Non-revenue Water Reduction</b>	The initiatives of DCWD to take hold of the water losses and reduce it to its minimum. This will not only reduce the waste of water, but will also reduce the waste of money.	The water losses have not yet been put to a minimum	Leak Reporting and Feedback System
<b>Infrastructure Development</b>	The technical support of the company by expansion and improvement of service coverage, 24-hours water supply, and enhanced water quality.	Leaks and connection problems	Geographical Information System, Leak Reporting, and Feedback System
<b>Customer Satisfaction</b>	A basic need for a company is to provide complete and utmost satisfaction to its customers through sufficient care and attention.	Complaints of long lines, time consuming payment and customer feedback processes	Online Payment, Leak Reporting and Feedback System
<b>Environmental Protection</b>	Refers to the social responsibility of the company to its community.	Leaks and connection problems	Geographical Information System, Leak Reporting, and Feedback System
<b>Resource Management</b>	The proper management of personnel, money, technology, materials and equipment within the company.	Individual Property Accountability Report is still manually done	Human Resource Information System, Procurement System, and Individual Property Accountability Report System

## 5. Detailed Description of Information System

### 5.1 IS Name, Description, Status, Development Strategy, Computing Scheme (Existing, Proposed, On-going)

Name	Description	Status	Development Strategy	Computing Scheme
Billing & Collection System	A system that generates billing statements and collects payments as a whole. Subsystems under this are Job Monitoring System, Meter Reading System, and Document Tracking System.	Operational	In-house	Existing
Job Monitoring System	<ul style="list-style-type: none"> <li>• This system monitors the feedback from customers/clients.</li> <li>• A system that accepts feedback and reports on problems from customers through online or through text messaging.</li> </ul>	<ul style="list-style-type: none"> <li>• Operational</li> <li>• Under development</li> </ul>	<ul style="list-style-type: none"> <li>• In-house</li> <li>• Telephone Companies</li> </ul>	<ul style="list-style-type: none"> <li>• Existing</li> <li>• On-going</li> </ul>
Meter Reading System	A system that simply reads and records the meter for water consumption in each	Operational	In-house	Existing

	<i>household.</i>			
Document Tracking System	This system tracks the location and flow of documents from one office to the other.	Operational	In-house	Existing
Document Management System	This system simply stores and manages all current documents within the company.	Operational	In-house	Existing
Accounting System	A system which tracks and records accounting transactions.	Operational but needs enhancement in connectivity to the Inventory System	In-house	Existing
Human Resource Information System (HRIS)	This system provides ease for the Human Resource Department's transactions. This includes subsystems such as the Medical Records System, Employees Record System, Leave Application System, and Training System.	Operational but language needs to be changed into Progress	In-house	Existing

<p><b>Procurement System</b></p>	<p>This performs the generation of purchase orders, purchase requests, and other reports. This also provides the usual transactions for the purchasing process of the company.</p>	<p>Operational but language needs to be changed into Progress</p>	<p>In-house</p>	<p>Existing</p>
<p><b>Vehicle Monitoring System</b></p>	<p>This monitors the maintenance of the company-issued vehicles.</p>	<p>Operational</p>	<p>In-house</p>	<p>Existing</p>
<p><b>Inventory System</b></p>	<p>A system which performs basic inventory transactions.</p>	<p>Operational but language needs to be changed into Progress</p>	<p>In-house</p>	<p>Existing</p>
<p><b>Geographical Information System</b></p>	<p>A system which performs geographical land marking and asset tracking.</p>	<p>Operational</p>	<p>Off-the-shelf</p>	<p>Existing</p>
<p><b>Online Payment System</b></p>	<p>A system that accepts payments from customers online, and will be available in the bank's internet banking system service by BDO.</p>	<p>Operational</p>	<p>In-house/ Internet Banking System</p>	<p>Existing</p>

<b>Individual Property Accountability Report System</b>	<b>A system that assigns and tracks the assets of each employee.</b>	<b>To be developed</b>	<b>In-house</b>	<b>Proposed</b>
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## 6. Impact and Linkages of Information System

### 6.1 IS Name, Impact to Thrusts/Programs, Linkages (Internal/External)

NAME OF INFORMATION SYSTEM	IMPACT TO STRATEGIC THRUSTS/PROGRAMS	Linkages (Internal/External)		
		INTERNAL		EXTERNAL
		OWNER	USER/S	USER/S
<ul style="list-style-type: none"> <li>• Billing System</li> <li>• Collection System</li> </ul>	<ul style="list-style-type: none"> <li>• Handles resource management, and customer satisfaction.</li> <li>• Handles resource management</li> </ul>	<ul style="list-style-type: none"> <li>• Commercial Department</li> <li>• Finance and Property Department</li> </ul>	<ul style="list-style-type: none"> <li>• Commercial Department, and Electronic Data Processing</li> <li>• Finance and Property Department, Electronic Data Processing, Accounting and Budget Department, and Commercial Department</li> </ul>	None
Job Monitoring System	Handles customer satisfaction, and resource management.	Community Relation and External Affair	Finance and Property Department, Operation and Maintenance	Customers

				Department, Community Relation and External Affair, and Engineering and Construction Department	
Meter Reading System	Handles customer satisfaction, infrastructure development, and resource management.	Commercial Department	Commercial Department, and Electronic Data Processing	None	
Document Tracking System	Handles resource management.	All	All	None	
Document Management System	Handles resource management, and customer satisfaction	All	All	None	
Accounting System	Handles Davao Water District's resource management.	Accounting and Budget Department	Accounting and Budget Department	None	
Human Resource Information System	Handles Davao Water District's personnel and employees.	Human Resource Department	Human Resource Department	None	
Purchasing System	Handles Davao Water District's resource management.	Purchasing Department	Purchasing Department	None	
Vehicle Monitoring System	Handles Davao Water District's resource management.	General Services Department	General Services Department	None	

Inventory System	Handles Davao Water District's resource management.	Finance and Property Department	Finance and Property Department, Accounting and Budget Department	None
Geographical Information System	Handles Davao Water District's environmental protection, infrastructure development and non-revenue water reduction.	Electronic Data Processing	Electronic Data Processing, Engineering and Construction Department, Operation and Maintenance Department	None
Online Payment System	Handles Davao Water District's customer satisfaction and resource management.	Electronic Data Processing	Accounting and Budget Department	Customers
Individual Property Accountability Report System	Handles Davao Water District's resource management	Finance and Property Department	Finance and Property Department	None

# 7. Conceptual Framework for Information Systems

