



LAGUNA LAKE DEVELOPMENT AUTHORITY

Introduction to

LAGUNA DE BAY AND LLDA

Presented at the

2nd Thematic Workshop

On

Water Rights and Allocation

06 June 2006

**La Mesa Dam Old Guesthouse, Quezon City,
Philippines**

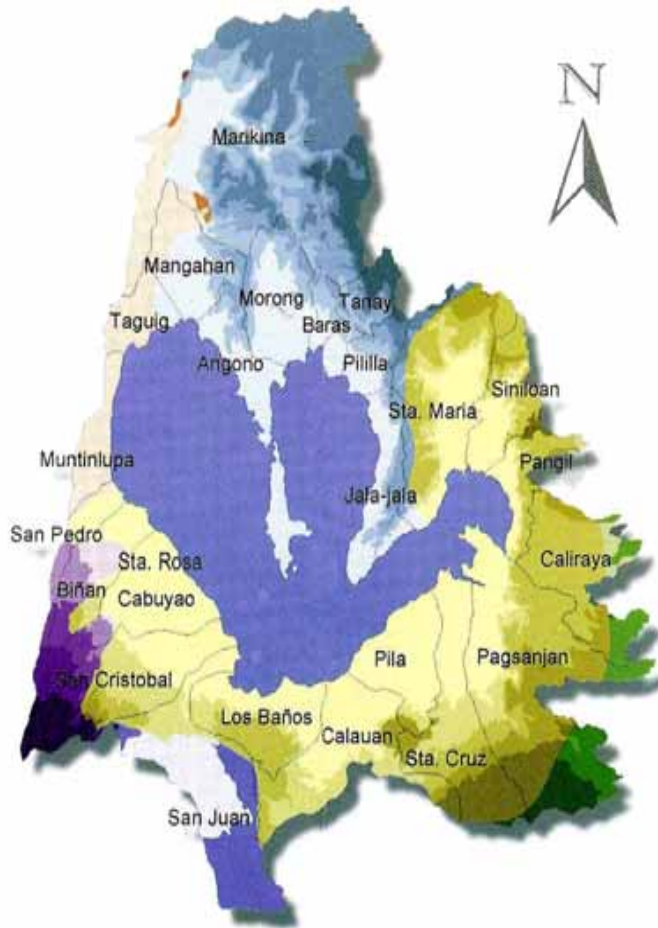


Laguna de Bay . . .

The largest and most vital inland water body in the Philippines.

18th Member
of the
World's Living Lakes
Network.





QUICK FACTS

Surface Area:	* 900 km²
Average Depth:	~ 2.5 m
Maximum Depth:	~ 20m (Diablo Pass)
Average Volume:	2,250,000,000 m³
Watershed Area:	* 2,920 km²
Shoreline:	* 285 km
Biological Resources:	fish, mollusks, plankton, macrophytes

(At 10.5m Lake Elevation)*

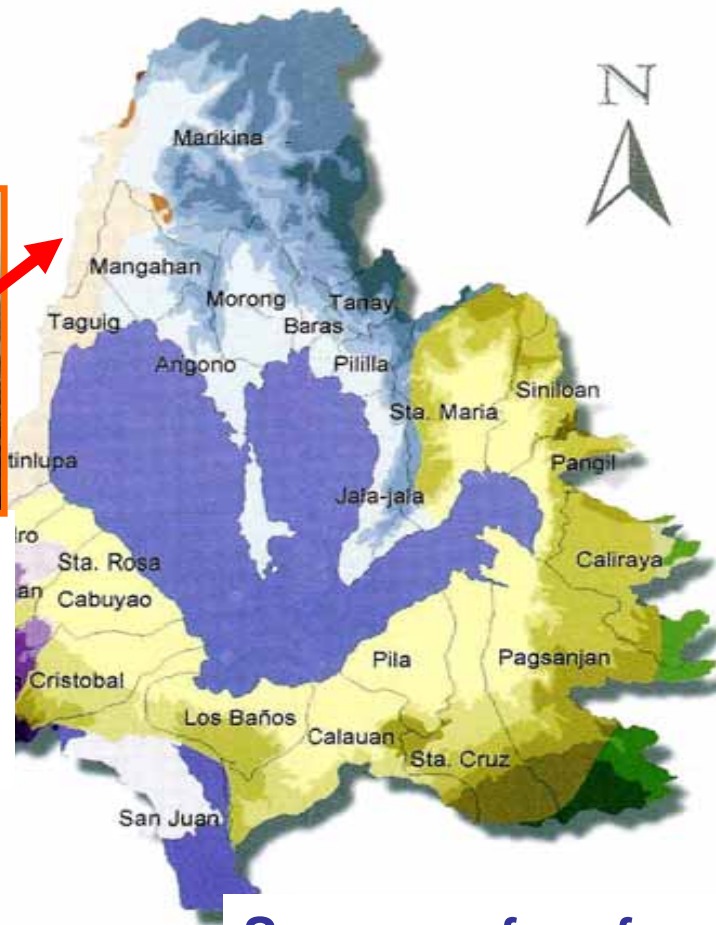
**The lake is life support system
to about 13 million people
3.5 million of whom live in 29 lakeshore
municipalities and cities**

Lakeshore cities/municipalities	=	29
Non-lakeshore cities/municipalities	=	32
Total no. of barangays	=	2,656



Only Outlet

Napindan Channel connects the lake to Manila Bay



Sources of surface recharge

21 Major Tributaries

14% Pagsanjan-Lumban River

7% Sta. Cruz River

79% 19 remaining tributary rivers

The **Pasig River** is an important component of the lake ecosystem. It is the only outlet of the lake but serves also as an inlet whenever the lake level is lower than Manila Bay.



- The lake is life support system to about 13 million people
- 3.5 million of whom live in 29 lakeshore municipalities and cities



Multiple Use Resource

Fishing



It is the major source of freshwater fish in Metro Manila and the surrounding municipalities, and cities.



Dominant use for fishery . . .



Open water



Aquaculture

EXISTING LAKE USES

Hydro power generation



Transport Route



Flood Water Reservoir



EXISTING LAKE USES

Irrigation



**Industrial
Cooling**



**Recreation and nature
appreciation**



Pediastrum sp.



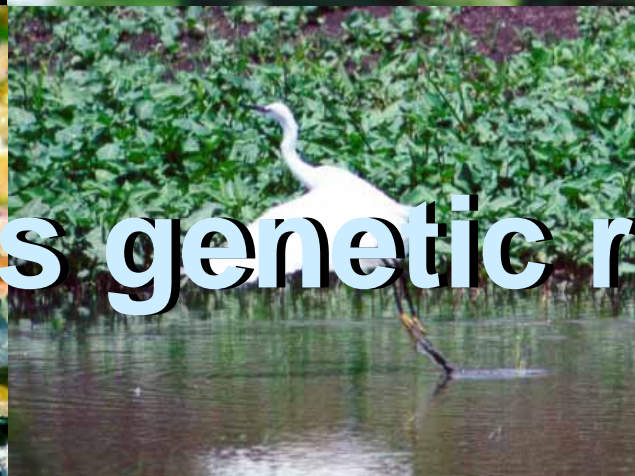
Eichhornia crassipes



Therapon plumbeus



Nymphaea



Najas graminea

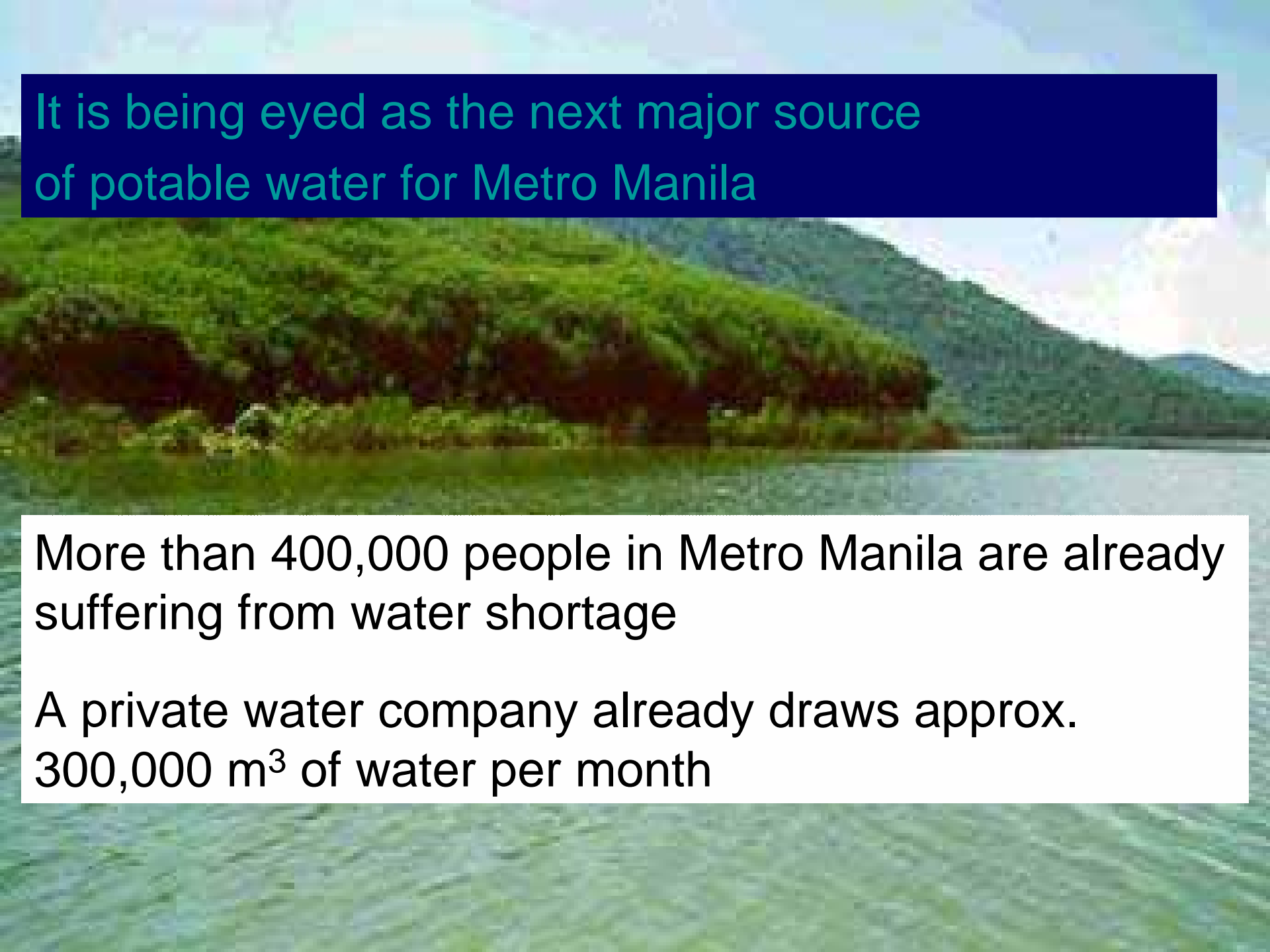
Provides genetic resources.



Corbicula manilensis



Pistia stratiotes



It is being eyed as the next major source of potable water for Metro Manila

More than 400,000 people in Metro Manila are already suffering from water shortage

A private water company already draws approx. 300,000 m³ of water per month

Laguna de Bay is a strategic political, economic and ecological resource that has to be managed well as a **Living Lake**, capable of sustaining life, livelihood and economic progress in the region and its environs.



An aerial photograph of a lagoon with a boat and mangroves. The water is a light blue-grey color, and the mangroves are a vibrant green. A small boat is visible in the lower-left quadrant of the image. The text 'The Laguna Lake Development Authority' is overlaid in the center in a bold, blue, sans-serif font with a white outline.

The Laguna Lake Development Authority



RA 4850 (1966). . . .to promote and accelerate the development and balanced growth....with due regard for environmental management....

DAO 2004-61
Transfer of ECC/CNC issuance

EO 349 (1996)
Adoption and implementation of Laguna de Bay Master Plan

EO 149 (1993)
Placed under DENR for administrative supervision and policy coordination

PD 813 (1975)
Expanded the mandate of LLDA to address environmental protection including the power to issue permit for the use of surface waters



EO 927 (1983)

- Classified LLDA as Class A Corporation
- Authorized to modify its organization
- Granted water rights over Laguna de Bay and other water bodies within the region
- Granted power to control and abate pollution within the region
- Authorized to collect fees for the use of lake water

LLDA Mandate

“ *To* promote and accelerate the development and balanced growth of the Laguna Lake area within the context of national and regional plans and economic development to carry out the development of the Laguna de Bay Region with due regard and adequate provisions for environmental management and control, preservation of the quality of human life and ecological systems and the prevention of undue ecological disturbances, deterioration and pollution. “

LLDA Key Functions

POLICY AND PLANNING**

- Develop Lake with due regard to environment and prevention of ecological imbalance
- Conduct comprehensive survey/studies
- Prepare comprehensive plan to conserve and utilize resources
- Exercise water rights within Laguna Lake
- Prepare a water quality management program
- Coordinate policies with other government agencies and stockholders








REGULATORY***

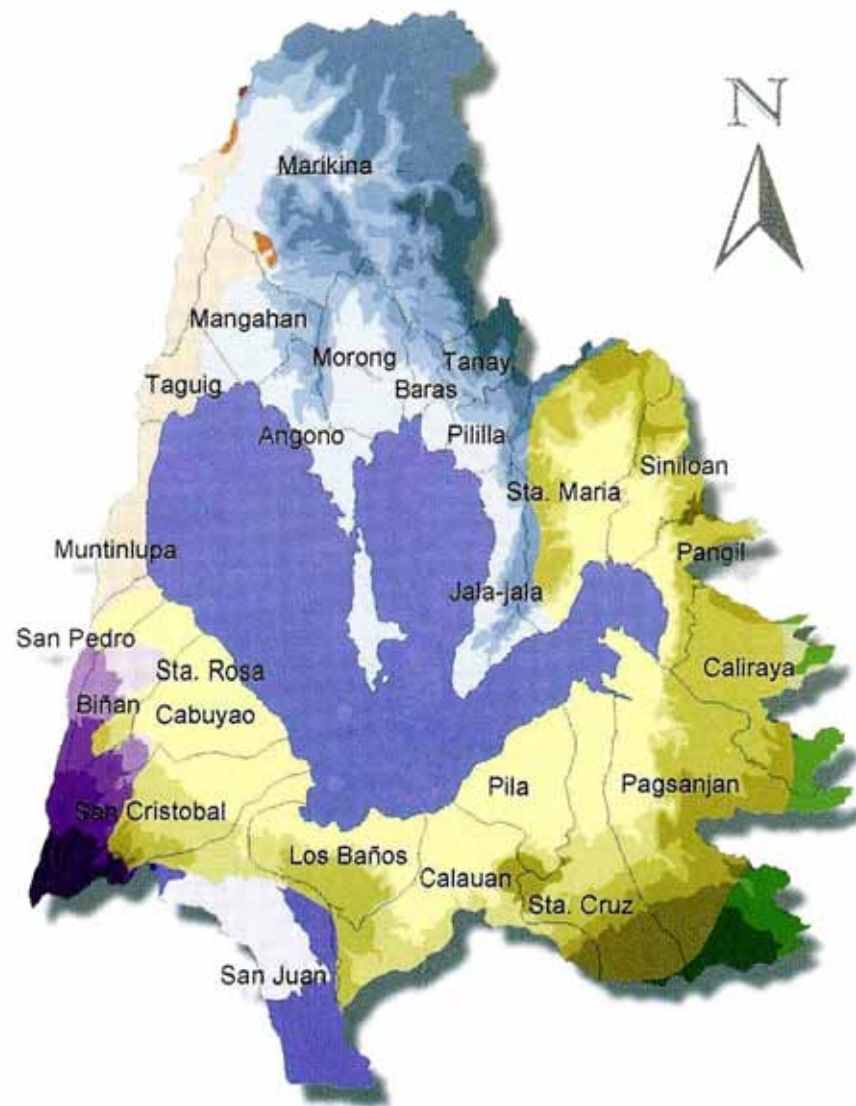
- Establish and enforce water quality standards for industrial, agricultural and municipal use
- Issue and revoke permits for use of surface waters within the lake region
- Approve development plans proposed by LGUs, private persons or enterprises
- Collect fees for use of Laguna Lake resources for all beneficial purposes
- Compel compliance

INFRASTRUCTURE AND RESOURCES DEVELOPMENT*

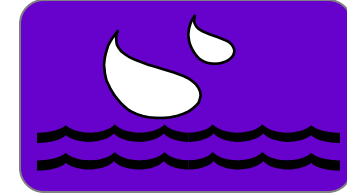
- Prepares and implement infrastructure projects such as river works, flood control and sewerage
- Reclaim portions of the Lake
- Undertake re-adjustments, relocations or resettlement of populations
- Finance Infrastructure projects
- Collect reasonable fees and toll charges
- Develop water supply from groundwater or Lake water sources
- Engage in fish production and other aquaculture projects

LLDA's Administrative Jurisdiction

	Rizal	= 13 towns and 1 city
	Metro Manila	= 2 towns and 7 cities
	Cavite	= 3 towns and 1 city
	Batangas	= 2 towns and 1 city
	Laguna	= 27 towns and 3 cities
	Quezon	= 1 town
	Laguna de Bay	



Total no. of cities	= 14
Lakeshore municipalities	= 25
Non-lakeshore municipalities	= 22
Total no. of barangays	= 2,656



Philippine Clean Water Act

R.A. 9275

- ✓ **Recognizes the LLDA Mandate**
- ✓ **Laguna de Bay Region as a watershed-focused Water Quality Management Area (WQMA)**



Laguna de Bay Region as a Water Quality Management Area

- Under the administration of the LLDA in accordance with its Charter (RA 4850 as amended)
- LLDA Board of Directors as the WQMA Governing Board

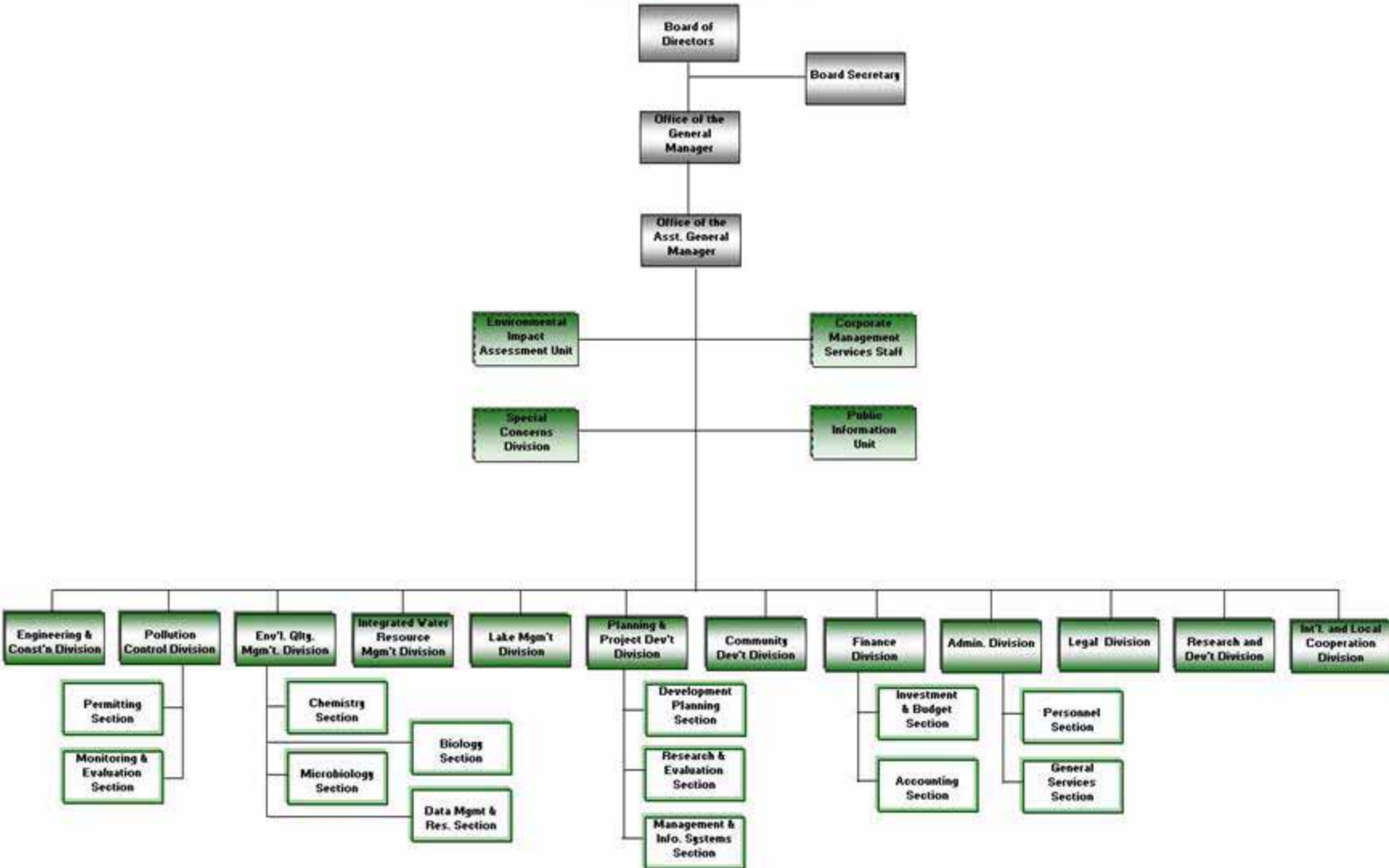
LLDA in Perspective

- Covers well defined area: Ecosystem/watershed-based
- Extensive and encompassing legal authority
 - Reviews/approves development plans/projects
 - Issues permits and collects fees on both intake and discharge of water
- Authorized to use its revenues for environmental and water related projects

Organizational Structure

Laguna Lake Development Authority

Existing Organizational Structure



Composition of the LLDA Board of Directors Under R.A. 4850 as amended



Representative of the Office of the President



Secretary, DENR



Secretary, DTI



Secretary, NEDA



Governor, Province of Laguna



Governor, Province of Rizal



Chairman, MMDA

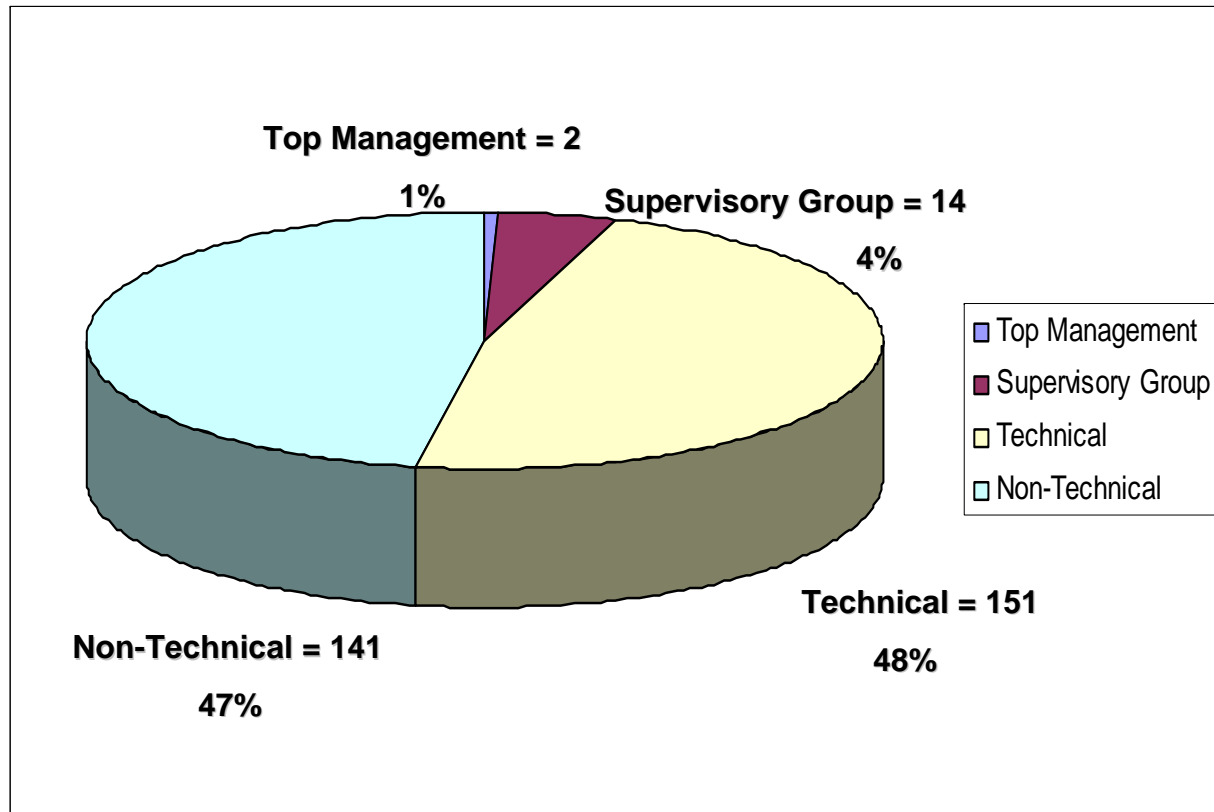
Presidents, Leagues of Mayors of Rizal and Laguna

Private Investors' Representative



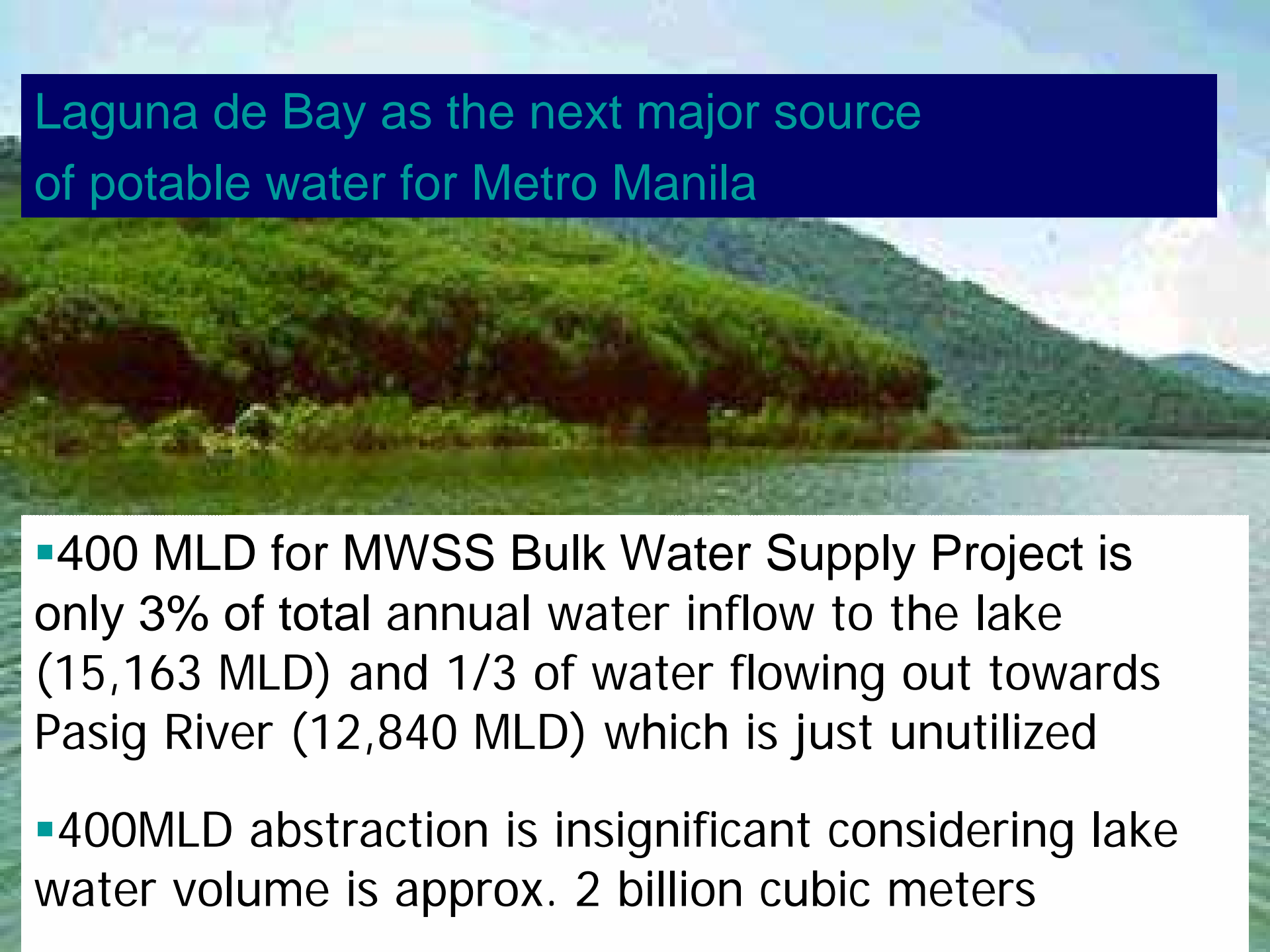
General Manager, LLDA, *ex-Officio member*

Personnel Complement as of March 2006



Total Number of Personnel - 310

Challenges and Opportunities



Laguna de Bay as the next major source of potable water for Metro Manila

- 400 MLD for MWSS Bulk Water Supply Project is only 3% of total annual water inflow to the lake (15,163 MLD) and 1/3 of water flowing out towards Pasig River (12,840 MLD) which is just unutilized
- 400MLD abstraction is insignificant considering lake water volume is approx. 2 billion cubic meters

Unprecedented economic growth over last 30 years brought rapidly expanding industrialization and urbanization in the region





The Laguna de Bay region has about 10,000 small, medium, and large business establishments.



Excessive discharge of pollutants from industries ...

... from communities



Threats to Tributaries

...which could lead to economic loss

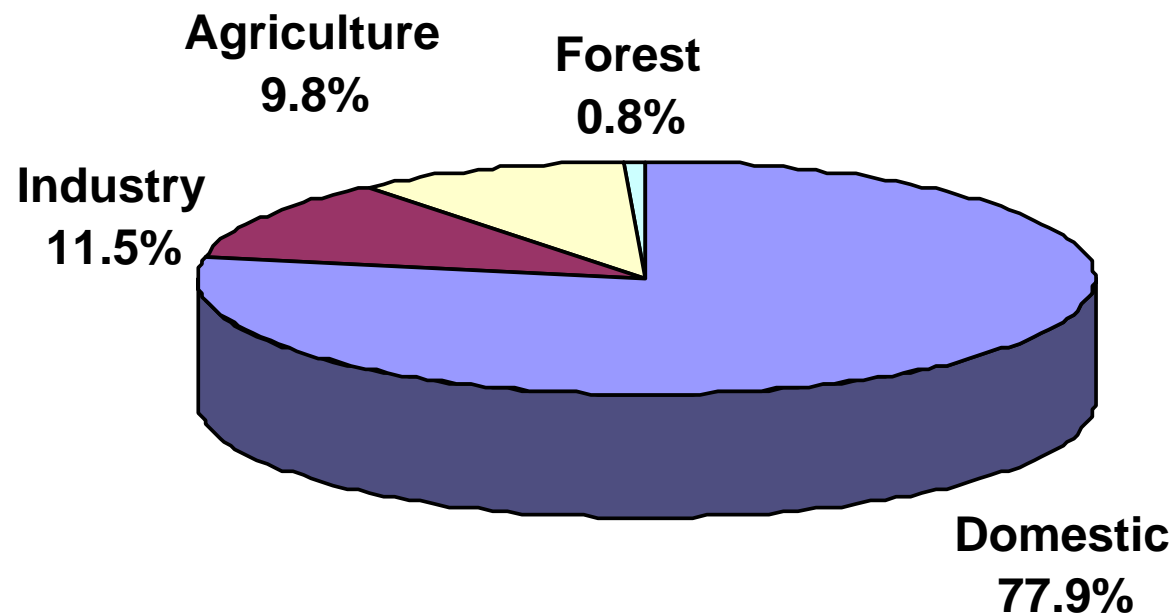
Waste Sink

Sewerage canals in 61 cities and towns within Laguna de Bay Region empty into 21 tributary rivers which all drain into the lake. Manila Bay also channels polluted waters into the lake daily via the Pasig River due to tidal flows.



Organic Waste Profile in the Lake

(As of 2004)



Fishpen controversy

- *Problem:* Fierce competition for the lake fishery resources

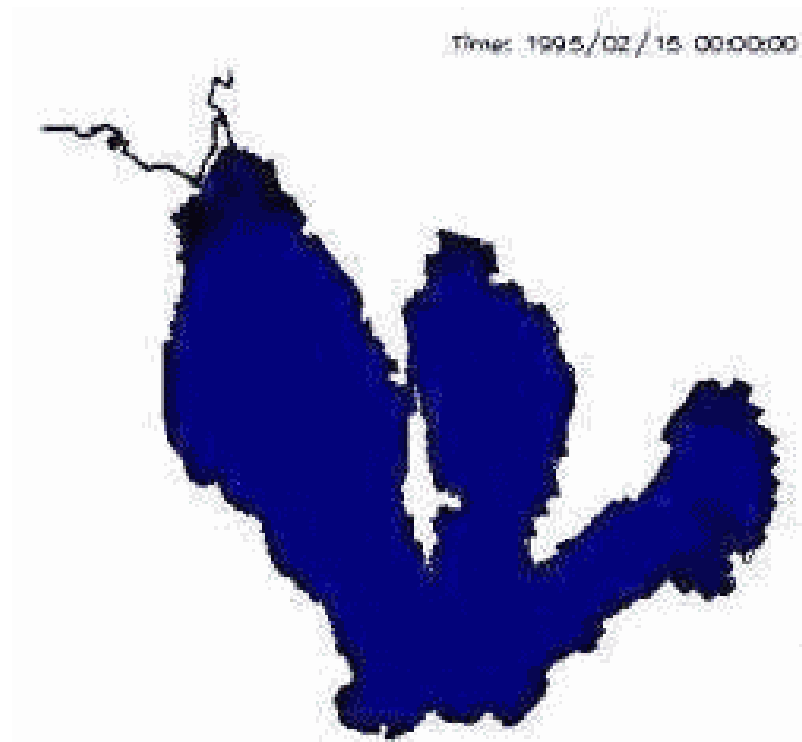


OVERFISHING



Declining
fish production

Salinity Intrusion



Legend:



BIOLOGICAL POLLUTION

Proliferation of non-native species, most recent of which is the janitor fish



Conflicts existing among users/uses or the zoning priorities and jurisdictions.

Encroachment in the lake is prevalent causing intrusions of pollutants into the lake water.



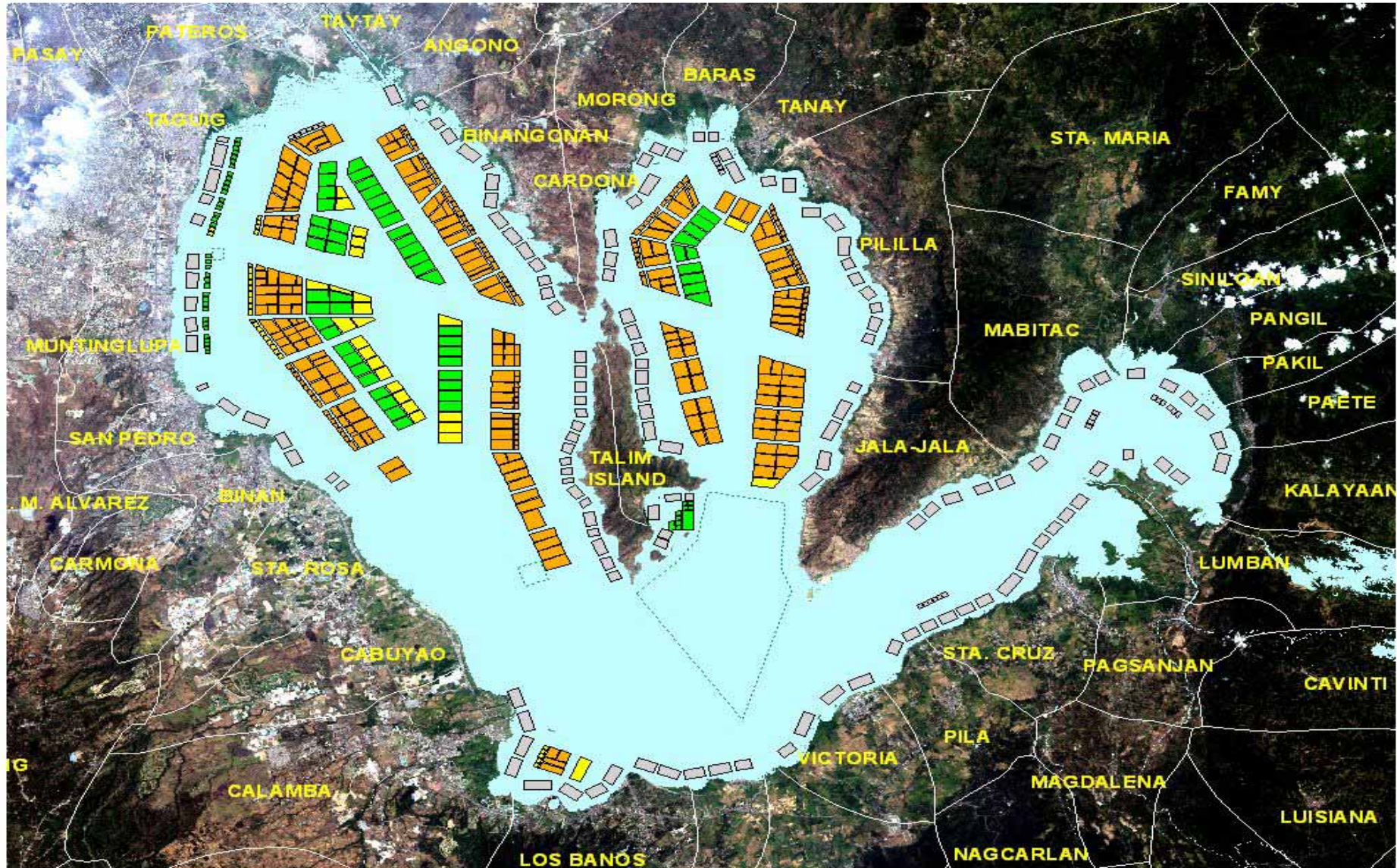
LLDA's IWRM Approach

- Watershed-based: 24 micro-watersheds serve as the basic units for planning & implementing environmental improvement programs
- Integrated and participative in approach
- Transcends political, economic and social interests
- Supported by scientifically-based natural resources and environmental management programs built upon LLDA's extensive water quality monitoring data

What is LLDA doing?



Flagship Programs



Laguna de Bay is a strategic political, economic and ecological resource that has to be managed well as a **Living Lake**, capable of sustaining life, livelihood and economic progress in the region and its environs.



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Salamat
at
Mabuhay
sa inyong
lahat!