

Chronology of Activities of Experimental Research

Barangay 46, Pasay City		
Date	Title	Place
May 25	Explanation Experimental Research to Pasay City Government	
May 29	Explanation of Experimental research to Brgy. 46	Brgy. 46 Hall
June 9	Data Gathering - Barangay Profile	Brgy. 46 Hall
June 12-14	Training Program for BEM and Team ESTERO	Great Eastern Hotel and Aberdeen Court, DPWH Central, Tripa de Gallina Pumping Station, Calatagan Creek, Brgy. 24 South Cembo, Estero de Tripa de Gallina, Pier 17 Dumpsite
June 19	Site Inspection	Barangay 46
June 25	Training Workshop for BEM and Team ESTERO	Max's Restaurant, Greenbelt, Makati
July 6	Stakeholder Analysis and SWOT Analysis Demonstration	Barangay Chapel
July 25	Lecture on Waste Segregation and R.A. 9003	Brgy. 46 Hall
August 5	Following-up of Program Proposals for each Focal Point (SWM, Beautification and Greening, Pollution Control, and IEC)	Brgy. 46 Hall
August 23	IEC Workshop	Barangay Chapel
September 8	Monitoring	Barangay 46
October 16	Presentation General Rehearsal	Barangay Palanan Hall, Makati
October 19	Presentation Final Rehearsal	Brgy. 46 Hall
October 22	2 nd Barangay Cluster Workshop	Traders Hotel, Manila
October 28	Site Visit	Barangay 46
November 4	Surprise Site Inspection	Barangay 46
December 9	Evaluation Monitoring – Knowledge, Attitude, and Practices Survey for BEM-ESTERO Team	Brgy. 46 Hall
January 15	Site Visit	Barangay 46
January 22	Site Visit	Barangay 46

EXPERIMENTAL RESEARCH FOR DRAINAGE SYSTEM IMPROVEMENT IN THE CORE AREA OF
METROPOLITAN MANILA

Barangay Profile
Barangay 46, Pasay City

1. History

YEAR	EVENTS
1950's	<ul style="list-style-type: none"> ➤ Barangay 46 was part of Barangay San Isidro ➤ The area had lots of trees, and houses were mostly made of plywood ➤ It was a haven to birds ➤ There was a bridge in the within the area because the water was deep (coming from the river) ➤ The known Manila Railroad crosses the Barangay, and there was a spring beside the river; the livelihood of the residents was fishing which also serves as their food supply
1973	<ul style="list-style-type: none"> ➤ There were 300 houses in Barangay ➤ The area was Masukal, and tambo plants grew ➤ Dalag, hito, gurami, and shrimps were being fished ➤ There were 30 informal settlers along the river that were later relocated in Dasmariñas Cavite Resettlement Area ➤ The Flood Control Program was implemented ➤ A wooden footbridge going in the Barangay was constructed ➤ The leader of the area was then called <i>Cabeza de Barangay</i>
1983-1989	<ul style="list-style-type: none"> ➤ People from provinces started crowding the Barangay and was recognized for it ➤ Project Green Revolution was introduced ➤ <i>Kabataang Barangay</i> (Barangay Youth) was established, Feeding Program, tournaments, and Barangay Clean-up were launched
1989-1996	<ul style="list-style-type: none"> ➤ An enormous fire occurred ➤ Scholarships were granted to the unfortunate children ➤ Partook in capturing drug pushers ➤ The Barangay Council was able to put up a Barangay Hall at the Tramo Line, a Barangay Day Care Center, a Barangay Chapel, and Barangay Outpost along Estero de Tripa de Gallina

2. Physical Profile

2.1 Geography

2.1.1 Location

- Zone 6, northeastern of Pasay City

2.1.1.1 Boundaries

- ❖ North - Barangay 43
- ❖ South - Gil Puyat Avenue
- ❖ East - Estero de Tripa de Gallina and Barangay Palanan, Makati
- ❖ West - Barangays 48 and 45

2.1.2 Land Area

- 34, 901 square meters

3. Organizational Structure

3.1 Administrative Services

3.1.1 Barangay Council

Hon. Arthur Gaylican	- Barangay Chairman
Hon. Nestor G. Advincula	- Barangay Kagawad
Hon. Ernesto Manacap	- Barangay Kagawad
Hon. Benjamin S. Evangelista	- Barangay Kagawad
Hon. Helen A. Chan	- Barangay Kagawad
Hon. Antonio Tangon	- Barangay Kagawad
Hon. Numeriano Opeña	- Barangay Kagawad
Hon. Erlinda Estrella	- Barangay Kagawad
Ms. Monica C. Gaylican	- Barangay Secretary
Ms. Gloria C. Villegas	- Barangay Treasurer
Mr. Russelle C. Davin	- SK Chairman

3.1.2 SK (Sangguniang Kabataan)

Ms. Marife Amayo
Mr. Jame Mike Arsenal
Ms. Jo-anne Canadilla
Ms. Mary Ann Nabua
Ms. Maranatha Basa
Mr. Glenn Lewis Phillips
Ms. Jesle Peñalosa

3.1.3 Barangay Pangkat Tagapagsundo

Mr. Willie Beltran
Ms. Natividad Tan
Mr. Andrew Phillips
Ms. Luisa Gines
Ms. Lulu Navarette
Ms. Lani Nabua
Mr. Hoemetrio Masagnoy
Ms. Felicidad Pulido
Ms. Emily Dimo

3.1.4 Barangay Tanod

Mr. Lucio de Guzman, Jr.
Mr. Marcial Modina
Mr. Doming Lanceta
Mr. Salvador Abuda, Sr.
Mr. Jesus Mora
Mr. Jaime Lingat
Mr. Jonathan Manansala
Mr. Jovencio Gulajao
Mr. Edward Tamayo
Mr. Rodolfo Peñaflor
Mr. Apolinario Salloman
Mr. Antonio Magbanua

3.1.5 Barangay Health Workers

Ms. Alma Managuit
Ms. Gloria Espiritu
Ms. Carmen Coyoch

3.1.6 Barangay Garbage Collector

Ms. Mercy Santos

3.1.7 Barangay Street Sweeper or Care Taker

Mr. Antonio Manansala

3.1.8 Barangay Environmental Manager

Hon. Benjamin Evangelista

3.1.8.1 Team ESTERO (Environmental Strategic Task for Estero Renewal Organizing) Members

Hon. Antonio Tangon
Ms. Alma Managuit
Ms. Eufemia Villanueva
Mr. Lucio de Guzman, Jr.
Mr. Jesus Mora
Ms. Natividad Tan
Mr. Jose Pascua

3.2 Budget and Expenditures

- o PhP 1, 700, 00.00 annually

3.3 Project and Programs

- o Construction of Barangay Hall, Day Care Center, Outpost, and Chapel
- o Barangay Motorcycle Patrol (2 units)
- o Christmas Package Distribution
- o Feeding Program
- o Outreach Program of Different Universities
- o Education, Livelihood Program Seminar

4. Socio-economic Conditions

4.1 Population

- o 4,509 (as of 2001)

4.2 Number of Households

- o 868 households

4.3 Income Level Population

- o High Income Level - 30% (1,353)
- o Middle Income Level - 40% (1,803)
- o Low Income Level - 30% (1,353)

4.4 Land Use

- o Residential - 98%
- o Commercial - 1%
- o Institutional - 1%

4.5 Social Environment

4.5.1 Cultural Practices

- Manghihilot
- Nagtatawas
- Albularyo
- Superstitious Beliefs

4.5.2 The Roles of Women, Youth, and Elderly

4.5.2.1 Women

- ❖ Self-employed
- ❖ Eateries
- ❖ Small Stores
- ❖ Native Delicacies

4.5.2.2 Youth

- ❖ Playing Sports like Chess, Basketball, Volleyball, Billards

4.5.2.3 Elderly

- ❖ Babysitting grandchildren
- ❖ Gardening

4.5.2.4 Disabled

- ❖ Electronics
- ❖ Technician
- ❖ Painting

4.5.3 Education

4.5.4 Health

4.5.4.1 Birth Rate - 1%

4.5.4.2 Mortality - 1%

4.5.4.3 Morbidity

- ❖ Tigdas
- ❖ Bronchopneumonia
- ❖ Epilepsy

4.5.4.4 Nutrition

4.5.4.4.1 Malnourished (1-6 years old)

- 70 children - 1st Degree
- 2 children - 2nd Degree
- 10 children - Above normal

4.5.4.5 Health Facilities

4.5.4.5.1 Barangay Health Center

- Weighing Scale
- Blood Pressure Apparatus

- Nebulizer
- Thermometer

4.5.4.5.2 Main Health Center (Barangay San Isidro)

- Blood Pressure Apparatus
- Weighing Scale
- Treatment Room
- Laboratory
- Family Planning
- Dental Services
- Conference Room

4.5.5 Sanitation

4.5.5.1 Solid Waste Management

- ❖ Before the Experimental Research for DICAMM, the residents along the estero throw their garbage in the estero
- ❖ During the Experimental Research, the Barangay started implementing Waste Segregation
- ❖ Garbage Collection from the residents along the estero is regularly done by the Barangay Garbage Collector with a pushcart. After collecting, the garbage is to be brought to the garbage truck at Tramo.
- ❖ The residents near Tramo simply put their garbage out for the Garbage Truck to collect
- ❖ The Garbage Collector Truck collecting from Barangay 46 is the Pasay City's Truck/Excellence; the Truck collects everyday in the morning without definite time

4.5.5.2 Water Supply

- ❖ Artificial Well
- ❖ Pump
- ❖ NAWASA
- ❖ Rain Water

4.5.5.3 Sewage and Toilet Facilities

- ❖ Poso Negro
- ❖ Creek

4.5.6 Community Infrastructure

4.5.6.1 Transportation

- ❖ Trisikad
- ❖ Jeep
- ❖ Taxi
- ❖ Van

4.5.6.2 Electricity

- ❖ Meralco
- ❖ Jumper

4.5.6.3 Recreation

- ❖ Volleyball
- ❖ Basketball

- ❖ Tong-its
- ❖ Bingo
- ❖ Gossiping

4.5.7 Peace and Order

- Proper Training of Barangay Tanods
- Implementation of City Ordinances
- Night roaming of Barangay Officials and Tanods

5. Environmental Conditions

5.1 Water Environment

5.1.1 Esteros

- Fishes like *pako*, and others are present

5.1.2 Drainage System

- There are 17 Drainages in the area
- There is a problem with the *putuhan*
- There is a water hose at Villa Barbara
- Small outlets
- No screens

5.2 Land Environment

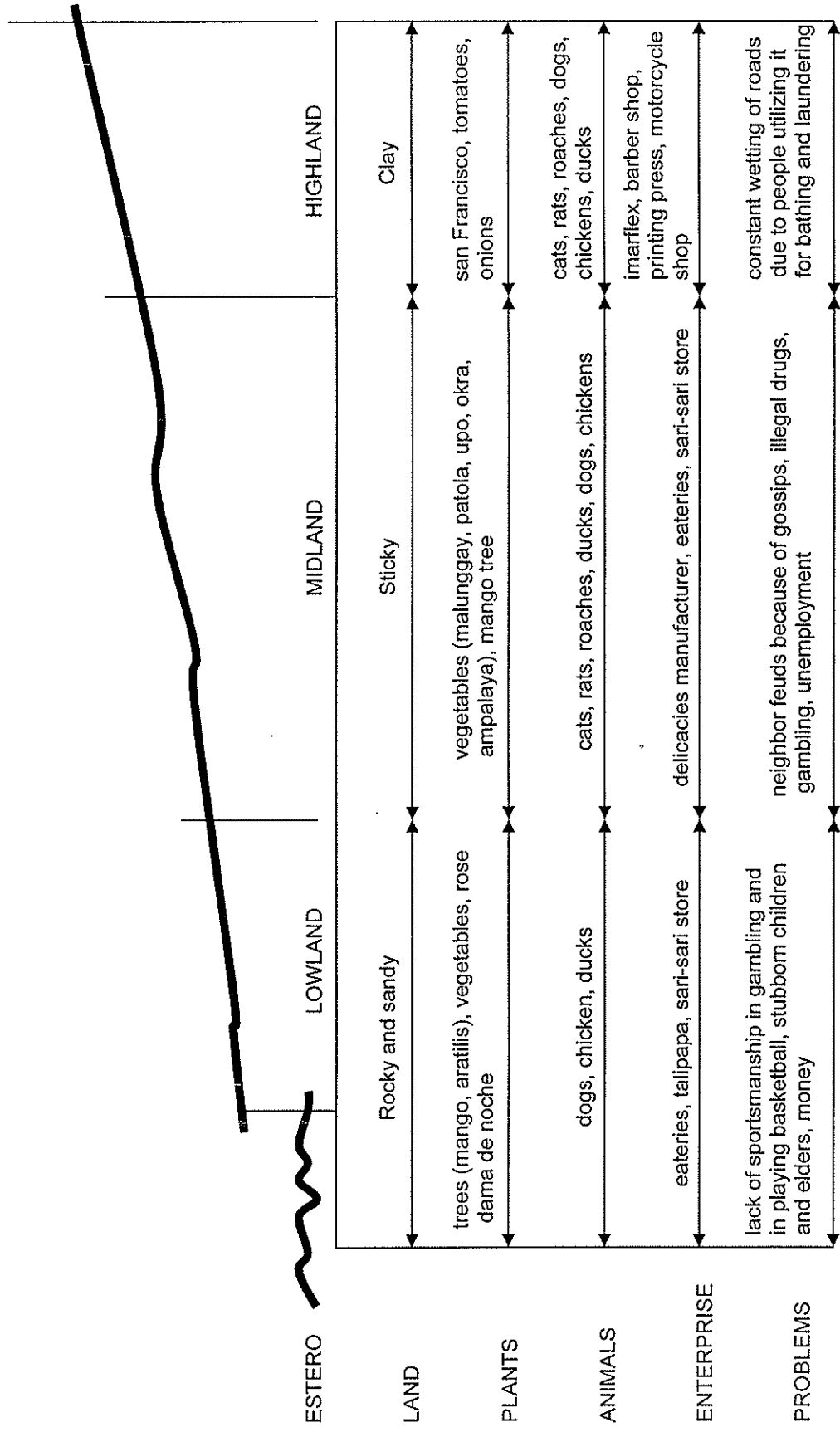
5.2.1 Vegetation

- Camote Leaves
- Eggplants
- Pechay
- Okra
- Tomatoes
- String Beans
- Alugbati
- Malunggay
- Kamoteng Kahoy

5.2.2 Birds and Animals

- Maya
- Chickens
- Doves
- Dogs
- Cats
- Rats
- Roaches

BARANGAY 46, PASAY CITY TRANSECT MAP



**Experimental Research for the Study on Drainage Improvement in Core Area of
Metropolitan Manila**

Barangay Council of Barangay 46, Pasay City

Hon. Arthur Gaylican	- Barangay Chairman
Hon. Nestor G. Advincula	- Barangay Kagawad
Hon. Ernesto Manacap	- Barangay Kagawad
Hon. Benjamin S. Evangelista	- Barangay Kagawad
Hon. Helen A. Chan	- Barangay Kagawad
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Ms. Gloria C. Villegas	- Barangay Treasurer
Mr. Russelle C. Davin	- SK Chairman

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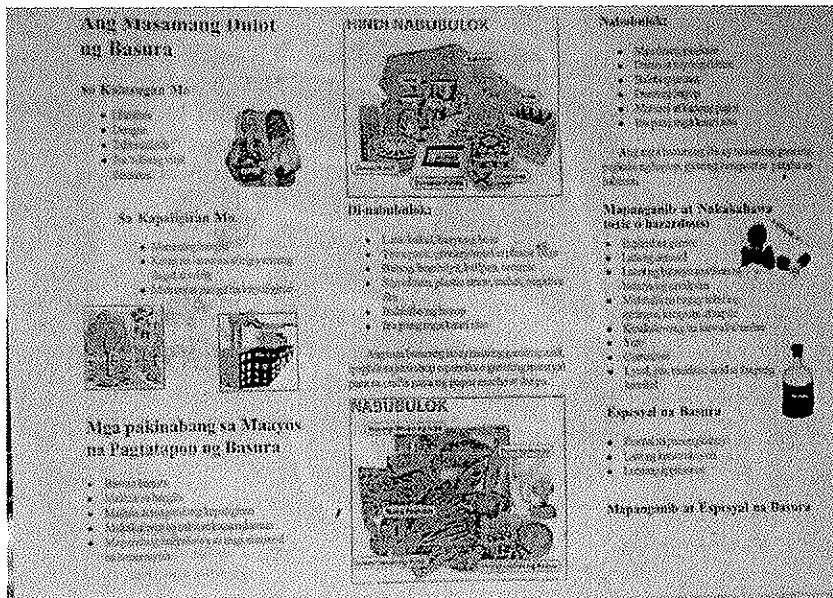
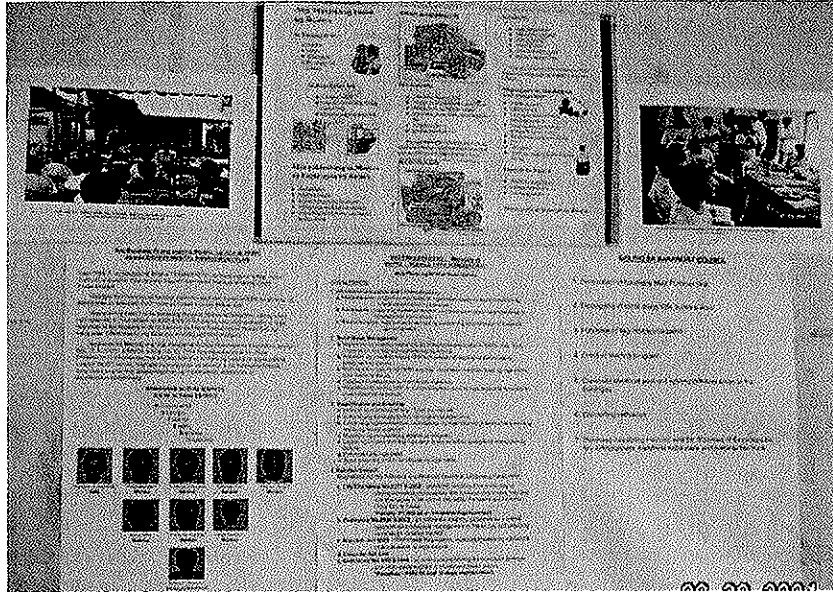
The BEM-ESTERO Team of Barangay 46, Pasay City

Barangay Environmental Manager: Benjamin S. Evangelista

Team ESTERO: Natividad C. Tan
Jesus S. Mora
Lucio F. de Guzman
Antonio M. Tangon
Sebastian Aguilar (*Jose H. Pascua*)
Alma M. Managuit
Eufemia M. Villanueva

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IEC Materials Used by Barangay 46, Pasay City



Ang BEM, Barangay Environmental Management at ESTERO Team ay nabuo noong Mayo 2004. Ito ay binubuo ng BEM at TEAM ESTERO, sa pangunguna ni Kap. Arthur Gaylican, at kumuluha siya ng isang Brgy. Environmental Manager at pitong Team Estero Member.

Nagbigay ng Workshop sa napiling miyembro ng Team Estero at BEM na ginanap ng tailong araw sa Aberdeen Court Hotel sa Makati Avenue, Makati City.

Nagkaroon ng Field Trip sa ibat-ibang Pumping Station at Dump Site, upang lubos na mapaunlad at maunawaan ng BEM at ESTERO ang tamang pagpapatupad ng mga kaalaman na ito. Nagkaroon ulit ng Seminar sa Max's Restaurant sa Makati City ng isang araw. Dito tinalakay ang Barangay Profiling at SWOT Analysis.

Nagkaroon ng Meeting ang mga Homeowners Association at mga taga JICA, DPWH at MMDA noong July 25, 2004. Naging panatuhin si Ms. Elsie Encarnacion at ipinaliwanag niya ang ibat-ibang uri at klase ng basura na dapat pakina-bangan. Sa IEC naman, nagbigay ng isang araw na seminar si Dr. Felixberto Roquia, kung paano ang tamang pagpapalaganap ng impormasyon, edukasyon at komunikasyon sa Barangay.

SAMAHANG BUO AT MAAYOS

B.E.M. at Team ESTERO

E-nvironmental

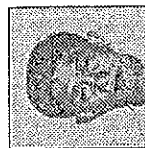
S-trategic

T-ask for

E-sterio

R-enewal

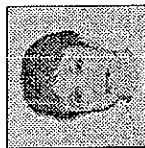
O-rganizing



Benjamin Evangelista
BEM
Member



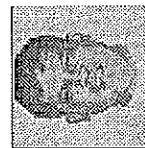
Alma Managuit
Member



Eufemia Villanueva
Member



Natividad Tan
Member



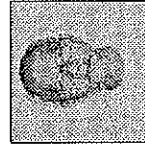
Antonio Tanson
Member



Jesus Mora
Member



Lucio de Guzman
Member



Jose Pascua
Member



Arthur C. Gaylican
Barangay Chairman

Mga Plano ng BEM at Team Estero

FOCAL POINTS:

1. Information Education and Communication

- a. Impormasyon- tungkol sa mga balita at mga bagay-bagay na dapat malaman ng bawat mamamayan ng barangay.
- b. Edukasyon- pagturo ng kaalaman tungkol sa mga impormasyon na pinalaganap o ipinaaabot sa mamamayan.
- k. Komunikasyon- mga pamamaraan upang ipaabot ang impormasyon at kaalaman sa mamamayan.

2. Solid Waste Management

- a. Nagkaroon ng meeting noong July 25, 2004 na pinangunahan ni MMDA Rep. Elsie Encarnacion ang tamang paghihiwalay ng basura.
- b. Nakaroon ng pansamantalang MRF sa barangay at dagdag na kariton upang ipanghahok ng basura.
- k. Binili ng pamunuan ng ESTERO ang mga recyclables materials tulad ng mga plastic, bote, karton at iba pa.
- d. Dagdag na kariton para sa Solid Waste materials.
- e. Magkaroon ng sariling MRF at Composting Area para sa mga recyclable materials at mga nabubulok na basura.

3. Beautification and Greening

- a. Ipatupad sa mamamayan ang "Tapat mo, inis mo".
- b. Ipatupad ang Barangay Ordinance tungkol sa obstruction
- k. Turuan ang mga mamamayan na maglagay ng mga halaman at taniman ang kanilang bahay ng "hanging plants".
- d. Maglagay ng pampublikong labahan at paliguan.
- e. Lagyan ng Cyclone wire ang mga open space sa estero upang hindi matapunan ng basura.
- g. Pinturahan ang mga pader.
- h. Apple green ang pintura sa harapan ng mga bahay.

4. Pollution Control

- Magpatupad ng City Ordinance ang Barangay Council at Sanguniang Panglunsod.
- a. City Ordinance No.2373 S-2002 - prohibiting anybody from producing or playing excessive unnecessary and unreasonable noises from any and all sources in the community within the territorial jurisdiction of the City of Pasay. *Penalty- P1,000. or 3 months imprisonment.

- b. Ordinance No.2536 S-2002 - an ordinance adopting guidelines for a unified approach on solid waste management in Pasay City and providing penalties for violation thereof.

- k. Republic Act 9003 - Solid Waste Segregation, mga paghihiwalay ng nabubulok at di nabubulok na mga basura.

- d. Clean Air Act Law

- e. Ordinance No. 658 S-1996 - an ordinance prohibiting the burning of garbage and other waste matters in private and public places.

*Penalties - P500.00 - 10 days imprisonment.

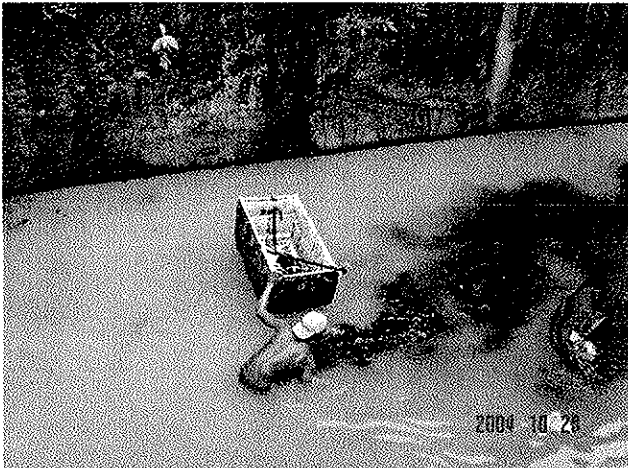
- 1. Renovation of Barangay Multi Purpose Hall
- 2. Declogging of canal along Villa Barbara Area.
- 3. Purchase of two motorcycle patrol
- 4. Conduct feeding program
- 5. Construct electrical post and lighting different areas in the Barangay.
- 6. Concreting pathways.
- 7. Purchase nebulizing machine and 50 Volumes of Encyclopedia, fire extinguishers, handheld radio icom and portable fire truck.

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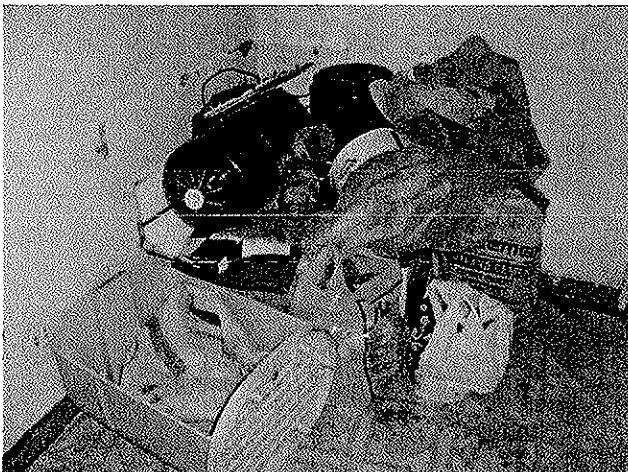
Photo Document of Barangay 46, Pasay City



Children's involvement in cleaning the
Barangay



Reduction of embedded garbage
blocking the flow of water in the estero



Collected recyclable materials from the
residents to be sold by the MRF
personnel to the nearby junkshop/s

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Photo Document of Barangay 46, Pasay City



Tripa de Gallina and garbage 's
recent situation



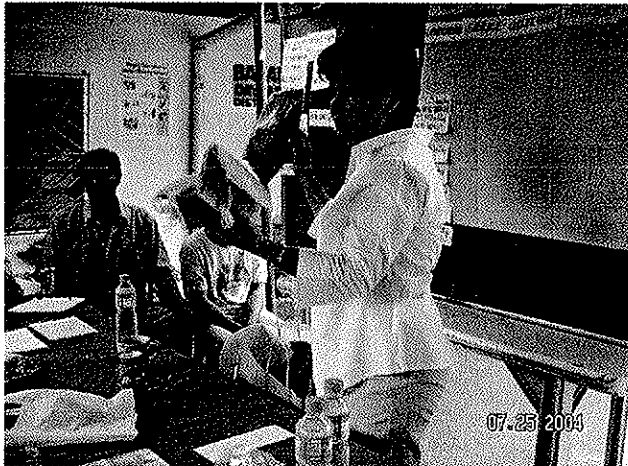
Garbage storage cart of the Barangay

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Metropolitan Manila**

Photo Document of Barangay 46, Pasay City



Waste Segregation and Ecological Solid
Waste Management Act (R.A. 9003) Lecture



Waste Segregation and Ecological Solid
Waste Management Act (R.A. 9003) Lecture



Waste Segregation and Ecological Solid
Waste Management Act (R.A. 9003) Lecture

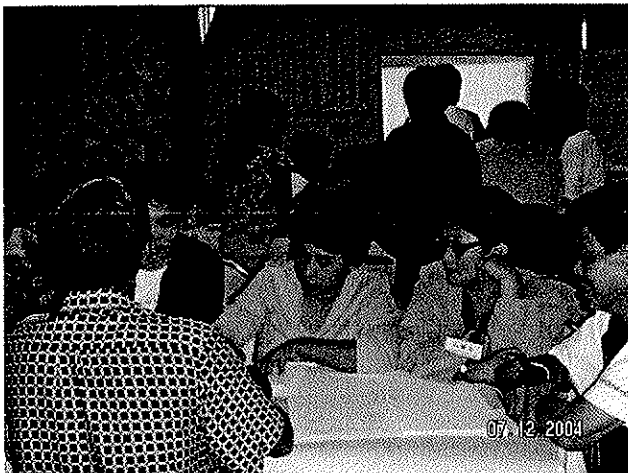
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Photo Document of Barangay 46, Pasay City



A 3-day Training Program for BEM and
Team ESTERO
*(Overview and Briefing on Experimental
Research)*

Day 1



A 3-day Training Program for BEM and
Team ESTERO
*(Overview and Briefing on Experimental
Research)*

Day 2



A 3-day Training Program for BEM and
Team ESTERO
*(Overview and Briefing on Experimental
Research)*

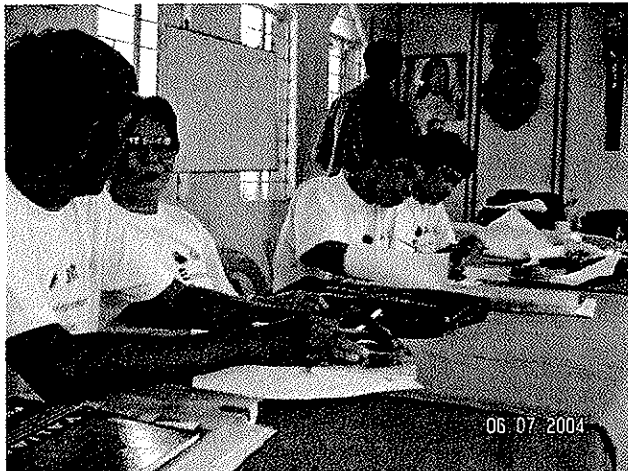
Day 3

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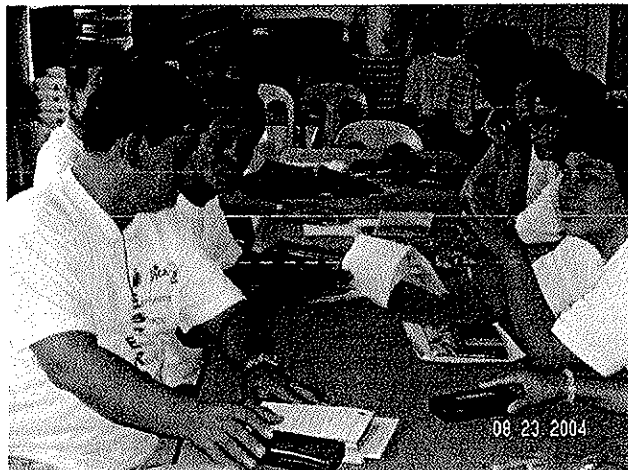
Photo Document of Barangay 46, Pasay City



Training Workshop for BEM and Team
ESTERO on Barangay Profile Writing



Stakeholder and SWOT Analyses
Workshop for the BEM and Team
ESTERO



Information, Education, and
Communication (IEC) Workshop

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Metropolitan Manila**

Photo Document of Barangay 46, Pasay City



Knowledge, Attitude, and Practices (KAP)
Survey for the BEM-ESTERO Team

Barangay Palanan

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Appendix 7	A Simple, Commonsensical Approach to Routing

**SOLID WASTE MANAGEMENT PROGRAM
BARANGAY PALANAN, MAKATI CITY**

I. Introduction

Every year many areas of Metro Manila experience varying levels of flooding, bringing about economic damage, disruption of normal daily living activities and increased health related problems. The flooding is not only caused by the inadequacy of the drainage and sewerage system, but also by solid waste dumped in the water bodies. It is clearly visible that much of these solid wastes come from the informal settlement areas along the waterways. The situation is exacerbated by the inaccessibility of these areas to regular collection vehicles due to narrow alleys and congestion. This scenario is demonstrated by the presence of voluminous pile of garbage choking water bodies and drainage systems.

In its desire to address the problem, the Department of Public Works and Highways (DPWH) with assistance from the Japan International Cooperation Agency (JICA) is implementing the Drainage Improvement in the Core Area of Metropolitan Manila (DICAMM). The project covers 73 sq. kilometres consisting of 1,191 of the 1,693 barangays in Metro Manila of which 376 barangays are located along the esteros. One of the components of the Drainage Improvement Project is the Experimental Research on environmental management which include environmental concerns such as pollution control, solid waste management, beautification and greening. Three barangays have been chosen as pilot areas, namely, Barangay 46 of Pasay City which is located along Estero de Tripa de Gallina; across it is Barangay Palanan of Makati City which is the second pilot barangay, and Barangay 195, Manila which is along Estero de Maypajo.

Solid waste is a major concern of the three pilot barangays, adversely affecting the environment of each. Thus, the Solid Waste Management Program of Barangay Palanan for 2005 is aimed at properly addressing the garbage problems of the community within the context of existing laws and regulations. The Solid Waste Management Program (SWMP) is prepared with the active participation of the community leaders. The program focuses in the improvement of the existing collection system as this function is the source of several pollution problems in the area. Furthermore, garbage collection is the most visible element of any solid waste management system to the public and the closest to the residents' daily activities.

The strategies and approach in the community-based solid waste management program are hinged on two underlying principles: solid waste management should be a shared responsibility between the government and the public; and, the sustainability of any community-based project can only be attained if there is support and participation of the residents of the concerned area. The strategies include organizational arrangement, capability building, intensive community organizing, public education and information campaign, monitoring and evaluation, and documentation and reporting.

II. About Barangay Palanan

1. Physical Profile

Barangay Palanan has a land area of 65.6 hectares. It is located north-western side of Makati. In the North, it is bounded by City of Manila/Zobel Roxas Street., in the east by Barangay San Antonio/Estero de Tripa de Gallina (across Barangay 46 of Pasay City), in the west by Pasay City/South Superhighway, and south by Barangay San Isidro/Gil Puyat Avenue. There is a creek called Calatagan Creek that cuts across from Estero de Tripa de Gallina to Filmore Street The physical environment of Barangay Palanan appears dilapidated, parks and open spaces are virtually non-existent.

2. Organizational Structure

The Council of Barangay Palanan has eleven members. Each of the seven Barangay Councils and the SK Chairman chair a committee. The committees include the Committee on Peace and Order, Committee on Livelihood, Committee on Appropriations, Committee on Health and Sanitation, Committee on Education, Committee on Clean and Green, and Committee on Sports and Youth Development.

3. Socio-Economic Conditions

The estimated population of Barangay Palanan is 40,350 (2001) with 10,561 households. Less than half of the land area, 41.84%, is residential while 14% is commercial. About 38.44% are road spaces while 1.80% is open space. Institutional and industrial areas take 1% of the land area. Barangay Palanan is predominantly middle class community with informal settlers confined to a limited area along the Estero de Tripa de Gallina and Arellano Street

There are five *manghihilots* and one *albularyo* in the barangay. Yearly during the Holy week, *pabasa* and *cenaculo* are held. And during the celebration of the barangay fiestas, singing and dancing contests are held including side car racing and a tour to Barangay Palanan.

For women, an organization called Women Watch provides counsels to troubled couples. The barangay and the Church also provide livelihood activities.

The *Sangguniang Kabataan* holds sports competitions every summer. Dubbed as *Sangguniang Kabataan Sports Leagues*, sports and games such as basketball, volleyballs and chess tournaments are played. Further, the SK promotes projects such as Anti-drug campaign and children feeding program. On the other hand, the elderly actively participate in Barangay and Church activities.

There are three schools in Barangay Palanan, namely, Bethany Bett's Nursery, Barangay Day Care Center and Palanan Elementary School where each pupil is given free school supplies such as bag, notebooks, textbooks, workbooks, pad paper, pencils, and ballpens. The Palanan Elementary School promotes computer literacy, thus, to start with the program, it has provided one unit for the use of the school children.

Health wise, the most common sicknesses in the barangay involve colds, cough, fever, influenza, and toothache. To improve the health of the children, the barangay implements a

feeding program. There are several health facilities such as Palanan *Bagong Lipunan* Center, Palanan Puericulture Center, Street Claire Hospital and Private Clinics the most popular of which are the Balbido and Gestopa Clinics.

For environmental sanitation, the city government supports the barangay by way of providing street sweepers and garbage collection services. As to sewerage, the barangay has drainage lines. Most households maintain septic tanks but there are those that directly discharge into the esteros.

Trucks, jeeps, cars, motorcycles and sidecars are the mode of transportation in the area. There are narrow alleys particularly in the community along the Estero de Tripa de Gallina where sidecars are the most practical means to go to the main roads to get the proper ride.

Meralco provides the electricity in the barangay while the Maynilad Water Services, Inc. provides the water supply.

4. Environmental Conditions

The esteros are no longer clean. Although the water still flows, there are always garbage floating or stuck at the banks. There is also waste water that is directly discharged into the esteros via pipes from the houses. Some drainage lines are clogged and these are often times cleared by the Engineering Office of Makati. Mounds of garbage are also occasionally observed in major thoroughfares.

III. Existing Solid Waste Management System

The Existing Solid Waste Management Program of Barangay Palanan is focused on three major areas, namely: segregation at source and separate collection in compliance with the basic mandate of RA 9003; garbage collection and street sweeping.

1. Storage and Segregation at Source

To comply with the mandates of Republic Act 9003, the city government requires the barangay officials to start implementing segregation at source and separate collection. To promote the program, the barangay conducted street dialogues and distributed flyers. Announcements were done in the church and through public address system by roving teams. Households store recyclable materials in *sando* plastic shopping bags. To separately collect the recyclable materials, the city government dispatches one mobile Materials Recovery Facility (MRF). Or, pushcarts collect around and sell collected materials to the junkshop located in the barangay. Currently, the level of compliance by the households is 15%, the lowest in District I where the highest is 100%.

2. Garbage Collection

Barangay Palanan is divided into six collection routes. Collection in each route is daily covering at least ten streets. *Table 1* lists the collection routes.

Table 1. Current Garbage Collection Route

Routes	Streets Covered
Route 1-A Violet	Start: South Superhi-way-cor Emilia; right to Marconi, right to Dayap, straight to Matanzas, right to Emilia, right to Ibarra, left to Dayap,, left to Guemica, right to Emilia, right to Dian, left to Dayap, left to Durango, right to Emilia, right to Bautista, left to Dayap, left to Cuenca, right to Emilia, right to Bermeo, left to Dayap, left to Araro and up to Emilia.
Route I-B Green	Start at Emilia (cor Filmore), left Calatagan, left Araro, left Dayap, left Bermeo, right Calatagan, right Cuenca, left Dayap, left Bautista, right Calatagan, right Durango, left Dayap, left Hilario, right Calatagan, right Florida, left Dayap, left Dian, right Calatagan, right Guimica, left Dayap, left Ibarra, right Calatagan, right Matanzas, left Dayap, up to Filmore.
Route 2-A Black	Start at Curie (cor Southsuperhi-way) right Enrique, right Diesel, right South Superhi-way, right, right Einthoven, left Dian, left Farebheit, right Inca, right Enrique, right Filmore up to cor Diesel.
Route 2-B Brown	Start at Zobel Roxas cor South Superhi-way, right Curie, right Bautista, left Boyle up to cor South Super hi-way.
Route 3 Orange	Start at Arellano cor South Superhi-way, right java, left Filmore, left Makiling, right South Superhi-way, right Casino, right Julio dela Cruz, right Araro, left Casino, left Bigasan, right Arellano, right Camalig, left Casino, left Bautista, right Arellano, right Quirinal, left Casino, left Puerto Rico, right Arellano, right Olivares, left Casino, left Dian, right Arellano, right Negros, left Casino, left Madras, right Arellano, right Laredo, left Casino, right Arellano, up to South Superhighway.

Figure 1 shows the Garbage Collection Route Map of Barangay Palanan.

3. Transport and Disposal

The LGU truck takes the collected garbage to Rodriguez Controlled Dumpsite which is owned by the Municipality of Rodriguez. MMDA pays the tipping fees of the garbage taken to this disposal facility by the LGUs.

4. Street Sweeping and Beautification

Street Sweeping and beautification are institutionalised activities of the City Government of Makati. In Barangay Palanan, there is a *Bantay Linis* Group composed of twelve personnel who are deployed everyday to sweep seven main streets (inner streets are maintained by Barangay Personnel). The deployment schedule is shown on Table 2.

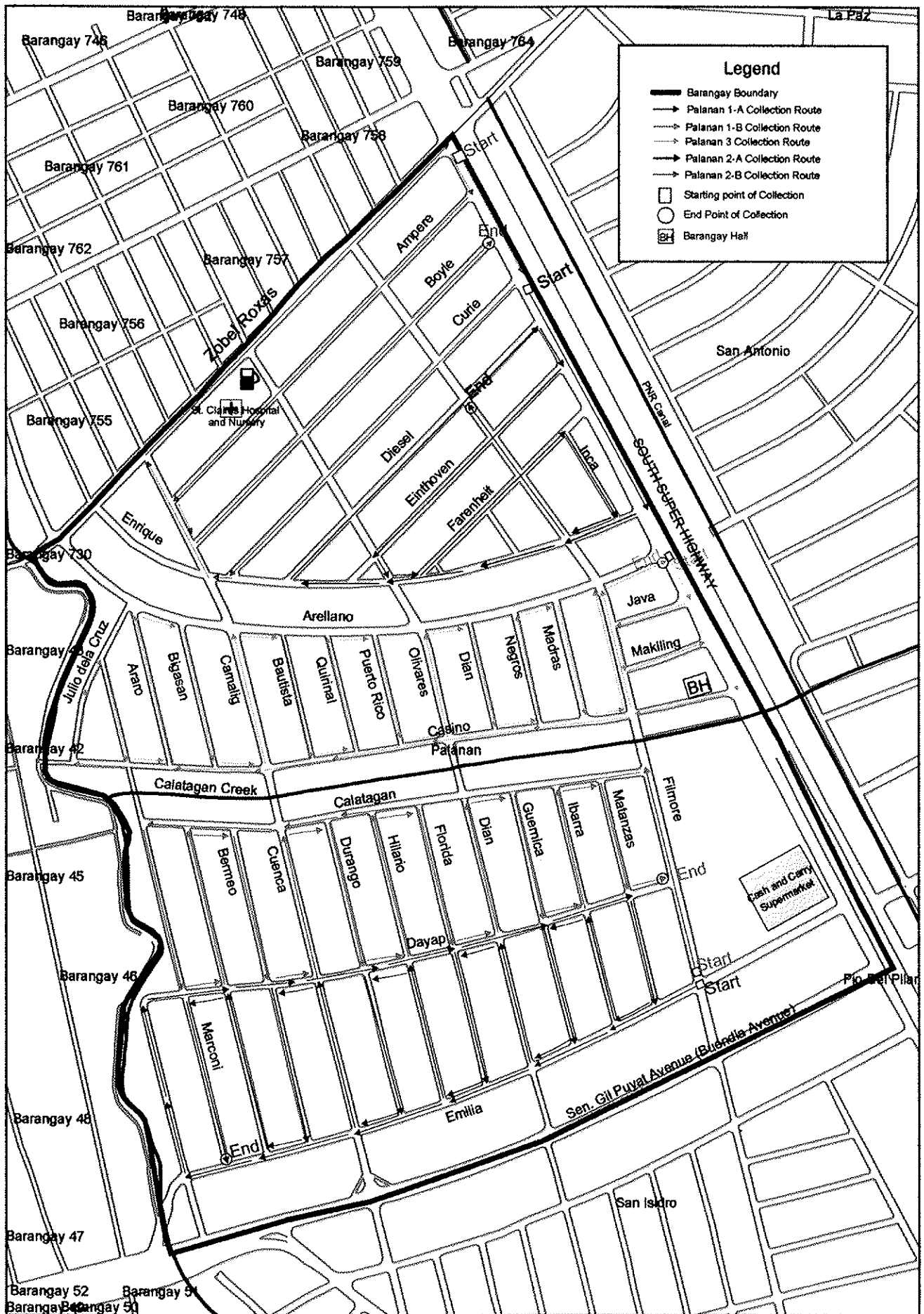


Figure 1. 2005 Garbage Collection Route of Barangay Palanan, Makati

Table 2. Street Sweeping Area Assignments

Name of Employee	Area of Assignment
1. Maribeth Oropesa	Filmore Street from Gil Puyat to Zobel Roxas(right side)
2. Virgilio Trinanes	Filmore Street from Gil Puyat to Zobel Roxas (left side)
3. Ronilo Castuciano	Dian Street from Gil Puyat to Zobel Roxas(right side)
4. Analiza Debuyan	Dian Street from Gil Puyat to Zobel Roxas (left side)
5. Leonila Gilledo	Emilia Street from South Superhighway to Marconi Street (right side)
6. Amalia Lacerna	Emilia Street from South Superhighway to Marconi Street (left side)
7. Pedro Nicdao	Bautista Street from Gil Puyat to Zobel Roxas(right side)
8. Nora Afos	Bautista Street from Gil Puyat to Zobel Roxas(left side)
9. Ma. Isabel Vizcarra	Arrellano Street from South Superhighway to Zobel Roxas St (right side)
10. Alma Nicdao	Arrellano Street from South Superhighway to Zobel Roxas St (left side)
11. Amalia Seneso	Zobel Roxas Street from South Superhighway to Arellano (left side)
12. Alvin Batac	Enrique Street from South Superhighway to Zobel Roxas St (both sides).

Beautification activities include repainting of gutters, planting of ornamental plants, and removal of obstructions such as cluttered large stones and small billboards on the sidewalks.

Figure 2 shows the Street Sweeping map.

IV. SWM Problems and Issues

In August 2004, a rapid community appraisal of Barangay Palanan was conducted by the city government together with the officials and leaders of the barangay. Through the consultation process, the following issues and concerns have been identified regarding the implementation of Republic Act 9003 particularly segregation at source, garbage collection, and enforcement.

1. On RA 9003 and waste segregation

- Most households do not segregate their waste;
- There are scavengers who roam around and scavenge on garbage untimely discharged by residents;
- No funds yet allocated for proposed MRF site at Olivarez.

2. Garbage Collection

- Households discharge or set out their garbage anytime and collection trucks do not arrived as scheduled sometimes;
- Households are angry with the loud “horn” of the garbage trucks;

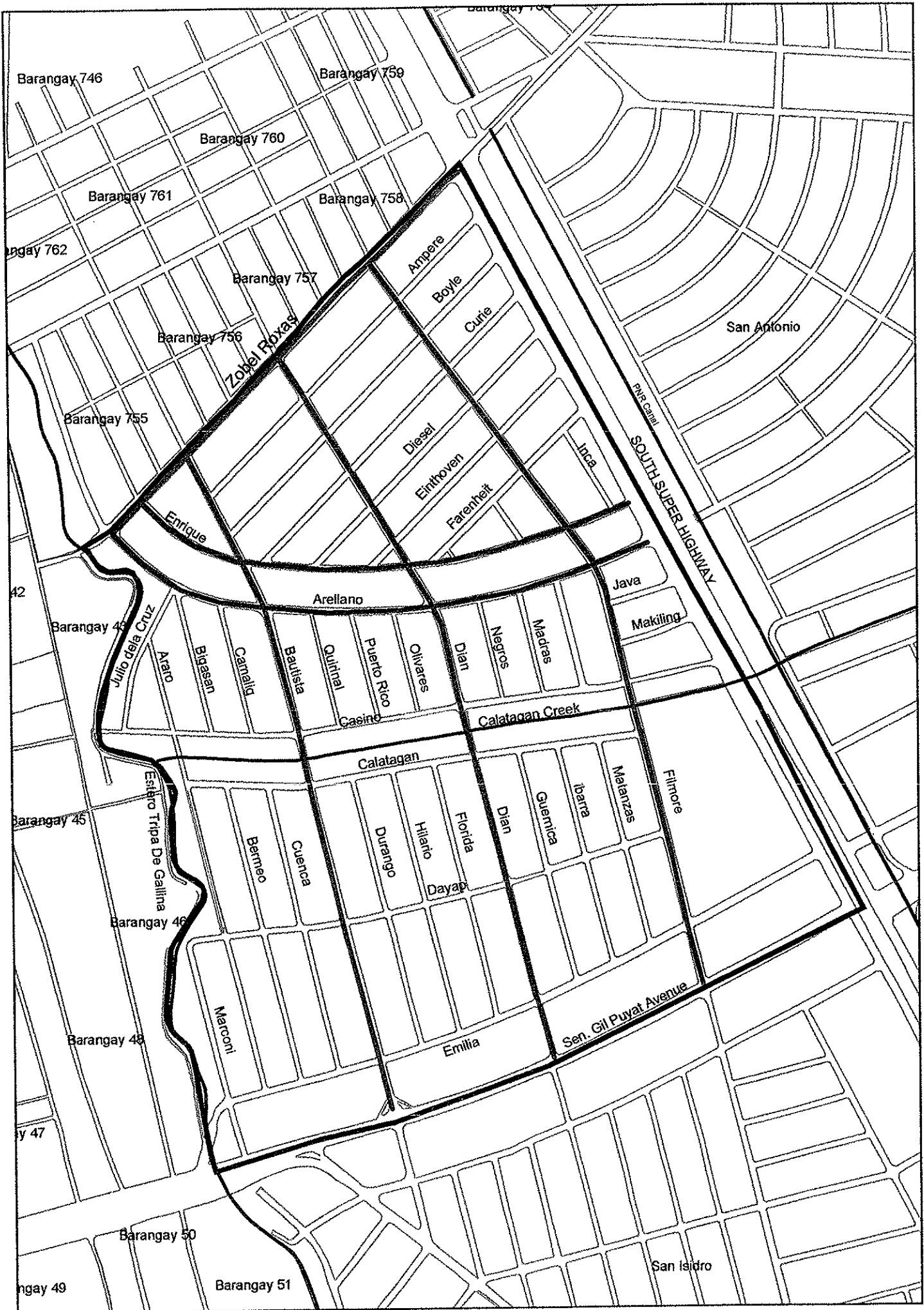


Figure 2. Streets Sweeping Areas of Assignment

- Some residents dispose their garbage on vacant lots;
- Sometimes there are no collection trucks in other areas of the barangay, or some sometimes garbage collection trucks do not have corresponding trip tickets;
- Some residents hang their bagged garbage on trees or posts and these do not look nice;
- Residents bring out their garbage too early in the morning and Scavengers scatter the garbage.
- There is no definite schedule of garbage collection in the different routes in the barangay;
- Sometimes, there are mounds and mounds of uncollected garbage at the South Superhighway ;
- Double parked cars obstruct streets so garbage trucks cannot collect;
- The “Tapat Ko Linis Ko” concept is not being widely implemented ;

3. Enforcement

- There are no environmental police to apprehend those who litter around or illegally dump garbage;

4. Equipment and Supplies and Others

- The barangay does not have the equipment to collect construction debris;
- There is no fund yet to construct a Materials Recovery Facility.

V. Goals, Objectives and Targets

Barangay Palanan particularly the community along the Estero de Tripa de Gallina is a congested, low income area. The basic characteristic of the area suggests the need for an improved system of collection including other support activities to ensure sustained implementation. While the current solid waste management program has already started implementing the requirement of Republic Act 9003 or Ecological Solid Waste Management Act of 2000 to meet the diversion goal of 25% in 2006, a lot of work need to be done considering that the current level of compliance is only 15%. Further, to be taken into consideration is the implementation of a MMDA Resolution regarding Unified Approach on SWM. This resolution focuses on door-to-door collection particularly in inaccessible areas along the waterways. The door-to-door collection system is also a tool to effectively implement the collection of source segregated waste.

The ultimate goal of the solid waste management system that will be put in place is to keep the streets and open spaces clean, keep the waterways free flowing so that flooding will be minimized and the daily lives of the people will not be adversely affected.

The objectives are as follows:

- Improve the collection system particularly considering the following:
 - improvement of the route plan to ensure 100% coverage of all areas and households;
 - Consistency with established collection frequency and schedule.
- Ensure a sustained implementation of the barangay solid waste management program which is focused on efficient door to door collection and waste reduction;
- Promote public participation through continuing education and information dissemination.

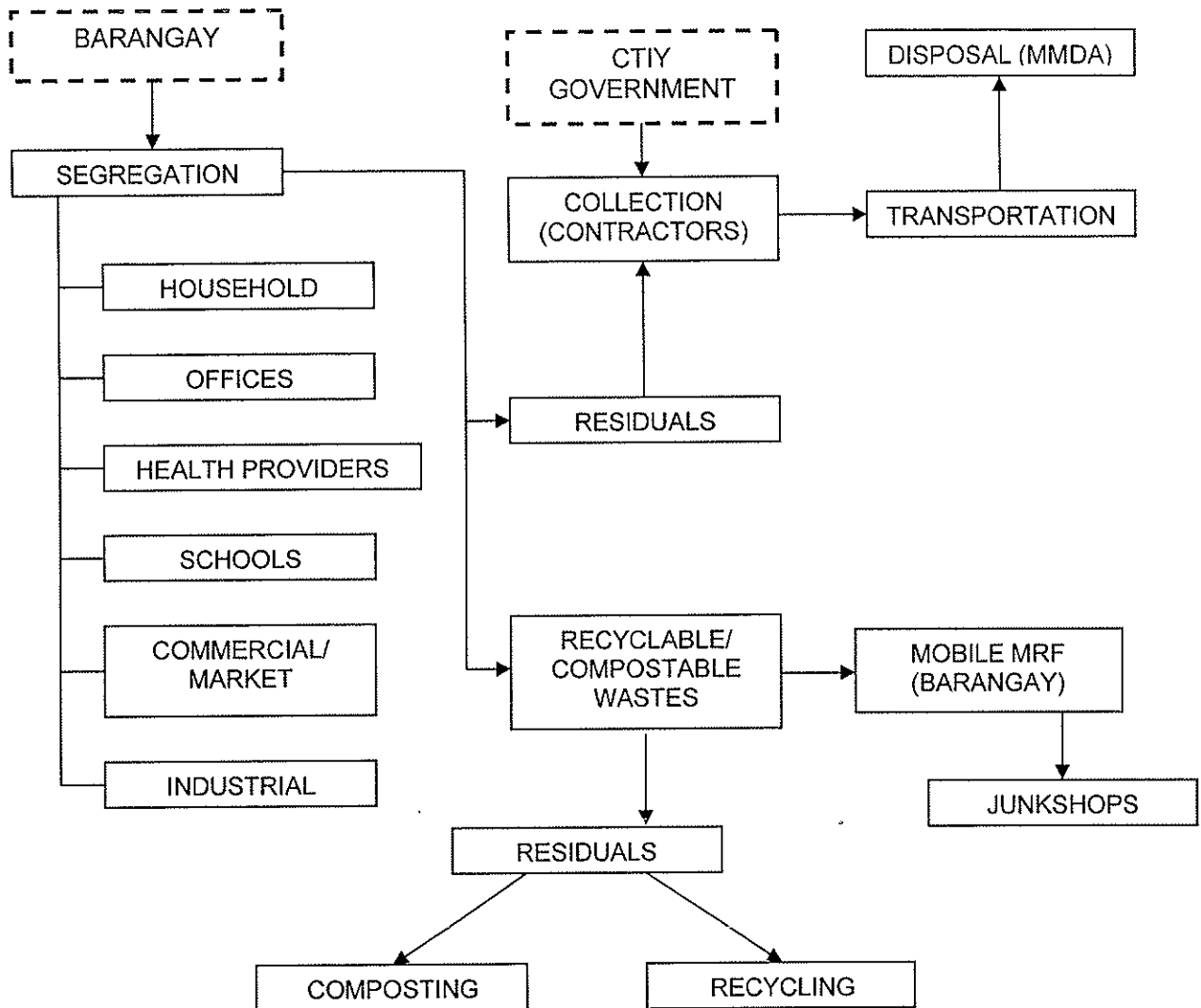
The targets are as follows:

- Constitute the Barangay Ecological Solid Waste Management Committee;
- Maintain satisfactory level of cleanliness (with reference to the criteria set in the monitoring system);
- Achieve 100% household participation in segregation at source;
- Divert at least 15% of the solid waste in 2005;
- Produce and distribute at least four types of IEC materials before the end of the year.

VI. Solid Waste Management System

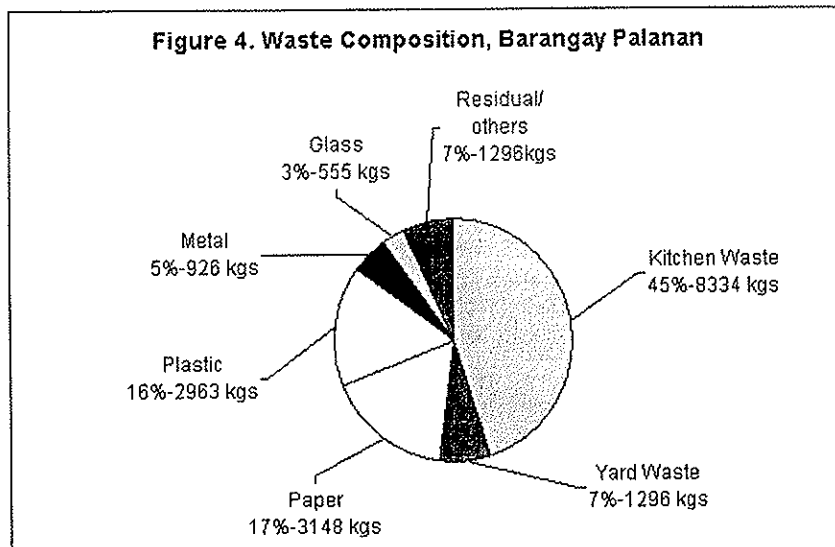
Until the end of 2000, the handling of solid waste in the country is simplified by the “mixed at source” approach. With the implementation of the new law, Republic Act 2000, segregation at source is mandated bringing about changes in the operations particularly in the collection system. *Figure 3* shows the flow of solid waste starting from household to final disposal facility incorporating segregation at source and separate collection.

Figure 3. Existing Waste Flow, Barangay Palanan, Makati City



1. Waste Generation

The estimated population of Barangay Palanan is 40,350 (2001). The population produces some 3,577.88 kilograms (at household level) of garbage daily (projected from the Waste Amount Characterization Survey conducted by the City Government in the year 2003). More than half or 57% is biodegradable and 17.19% is recyclable. There are other 7% that can be classified as residual waste. Figure 4 below shows the composition of solid waste in Barangay Palanan, Makati City.



Biodegradable waste refers to kitchen and garden waste; dry recyclable items include the different types of paper (old newspaper, old corrugated cartons, office white paper and mixed waste) different types of plastics such as PET plastics or mineral water bottles and *sibak* or assorted. Metals include iron, aluminium cans and tin cans while glass includes whole glasses such as soft drink bottles, liquor and alcohol, medicine bottles. From time to time, some items may not be traded or new items under the four categories of dry recyclable items may suddenly be included in the market. Others or residual wastes are those that may no longer be recyclables. In most cases, these are recyclable items but may be contaminated or too expensive to recover and process like the polystyrene materials under the classification of plastics.

2. Storage and Segregation at Source

As provided by RA 9003, segregation at source or at household level is mandatory which should be implemented by the Barangay Solid Waste Management Committee chaired by the Barangay Chairman. This requires different containers to be used. Normally, paper is segregated from the other recyclable materials to prevent it from getting soiled. Plastics, glasses and other food containers should be washed before they are stored prior to the collection by the primary collector.

While other communities may opt to use color coded plastic bags for the three different types of garbage, *sando* plastic bags are practical devices to store clean and dry recyclable materials and biodegradable materials (but separately) at household level but paper should be separated. Plastic roller bins and metal roller bin (metal) shall be used at community level.

There will be no communal storage device for mixed or residual waste. Stored residual waste will be discharged directly by the households on time of the arrival of the collection truck as scheduled.

3. Collection System

The following should be introduced to improve the existing collection system of Barangay Palanan:

3.1 Separate Collection

- a. In limited areas with narrow streets and alleys particularly the community along the Estero de Tripa de Gallina, recyclable materials should be separately collected with the use of roller bins, and or pushcarts primary;
- b. Where the streets are wider and longer, the mobile MRF should be dispatched regularly. A consistent schedule will be the best way to encourage households or establishments to participate;
- c. Since there is no composting activity that is going to be conducted within the barangay, the biodegradable waste shall be collected along with the residual waste by the city government's collection equipment on a regular schedule.

3.2 Routing System

- The Micro route plan of the established five macro-routes should be improved to minimize overlapping of runs which is a general feature of the existing routes. *Appendix 8* shows the guideline in preparing a micro-route.
- Frequency of Collection in a residential area should be limited to at most, three times a week. The map should indicate the specific route where collection is done 3x a week.

4. Materials Recovery Facility

A Materials Recovery Facility (MRF) is a recycling center to process and store dry recyclable materials prior to selling. It may also process biodegradable waste into compost or organic fertilizer. Barangay officials are required by law to put up a MRF in their respective jurisdiction. In the absence of an area, clustering is recommended.

- 4.1 In the case of Barangay Palanan, there is no existing MRF but a site has already been identified where the facility may be constructed;
- 4.2 The Mobile MRF, meantime, serves the purpose. It should be dispatched in the routes at least once a week. Inconsistency of collection discourages residents to participate in the Solid Waste Management Program.
- 4.3 Junk shops can also serve the purpose of MRFs. Thus, those collected by pushcarts or roller bins should be taken to the nearby junkshops.

VII. SWM Strategies

1. Organizational Arrangement

Anchored on intensive community organizing, the planning and implementation of the solid waste management program require human resources. The following groups are organized according to their functions. It is noted that the new organization is an

additional grouping as there are already at least 40 committees in each barangay in the country.

- The constitution of the Barangay Solid Waste Management Committee (BSWMC) is mandated by RA 9003. It is headed by the Barangay Chairman with eleven members. It is tasked to formulate the Barangay Solid Waste Management Program consistent with the 10-Year SWM Plan of the LGU or City of Makati.
- Organization of the Core Group. The Core Group serves as the technical working group of the BSWMC. It assists not only in the formulation of the BSWM Program but also in its implementation. In the case of Barangay. Palanan, the Core Group composed of community leaders is organized under the name, BEM-ESTERO (Barangay Environmental Management - Environmental Strategic Task for Estero Renewal Organizing) Team headed by a BEM or a Barangay Environmental Manager (who is not the Barangay Chairman). In the implementation of the Barangay SWM Program, the Barangay SWM Committee may function as a supervising group to the BEM and ESTERO Team.
- The Street Leaders assist the Core Group in the implementation particularly in the dissemination of information and/or distribution of materials. The street leaders serve as monitors regarding level of cleanliness, among others.

2. Capability Building

The human resources organized to formulate plans and execute certain activities to meet the objectives of the project need to be trained. Training needs are assessed. A shopping list of the basic subjects which the committees, groups and community leaders should be trained or oriented with are the following: Understanding garbage: its source, amount generated by each person, problems associated with and impacts of improper management of garbage, benefits of properly managed solid waste; functional elements of solid waste management; hierarchy of practices in solid waste management; SWM in Metro Manila; barangay concerns in RA 9003; door-to-door collection; facilitation techniques; presiding meetings; preparation of minutes; MRF housekeeping and operations; recording, monitoring, documentation and reporting. The capability building activities may be done through consultation meetings, lectures, orientations, seminars and workshops, study tours, mentoring and most of all, learning by doing.

3. Public Education and Information Dissemination

It is important to educate and inform the public about the project and instruct them on what to do if only to solicit their support and participation and make them realize their responsibility in solid waste management. It is also important to provide the public a feedback on the performance of the project so that they become a part of the whole process of proceeding with practices that are effective and improving those that need to be improved.. Public education and information dissemination should not be treated as a one shot deal in the project. A schedule of issues/concerns, messages and media should serve as a guide in the implementation of a public education program.

Table 3. Public Education and Information Implementation Schedule

Issues and Concerns	Messages	Media	Schedule
<p>1.</p> <ul style="list-style-type: none"> Residents are not aware of the SWMP in the barangay; or lack appreciation of the community problems in relation with SWM, residents do not know what to do with their garbage 	<ul style="list-style-type: none"> SWM problems in the community; Intro of the SWM Program including provisions of RA 9003 relevant to the barangay; Instructions on how to store and segregate waste ; and schedule of collection 	<p>Flyer : 1500 copies</p> <ul style="list-style-type: none"> House to house campaign by the BSWMC and Barangay Council; BEM ESTERO; Homeowners Association Coordinators, 	<ul style="list-style-type: none"> After formal entry in the project site or during the project launching to kick-off program implementation
<p>2. Residents lack the visual knowledge on the types of recyclable items.</p>	<ul style="list-style-type: none"> Photos of dry recyclable materials 	<p>Flyer: 1500 copies</p>	<ul style="list-style-type: none"> Distributed after program introduction.
<p>3. Residents are not aware of how the progress of the program.</p>	<ul style="list-style-type: none"> Project Update: community participation, level of cleanliness, MRF performance reduction. 	<p>Flyer: 1500 copies</p>	<ul style="list-style-type: none"> Should be issued every month or every two months
<p>4. How to do backyard or household composting</p>	<ul style="list-style-type: none"> Backyard or Household composting 	<p>Flyer: 1500 copies</p>	<ul style="list-style-type: none"> To be issued once during the project implementation (optional)
<p>5. Level of household participation is low.</p>	<ul style="list-style-type: none"> Program status; Announcement of incentives such as: The project will buy the recyclable items from the households; Recognition of participation. 	<p>Flyer : 1500 copies</p> <ul style="list-style-type: none"> Letter and House Sticker: 1200 copies 	<ul style="list-style-type: none"> Issuance is staggered based on the monitored performance of the households.

4. Enforcement

Environmental Police should be deputized to apprehend violators of anti-littering and anti-illegal dumping ordinances. Public’s knowledge on the existence of environmental police may be a deterrent factor.

5. Monitoring and Evaluation

The level of cleanliness and the amount of recyclable materials recovered are the basic gauge that measures the efficiency of the collection system reflecting not only the performance of the change agents involved but also the impact of the public education and information campaign. The conduct of monitoring and evaluation should be periodic.

5.1 Level of Cleanliness

The most visible result of solid waste management in a given area or community is the level of cleanliness measured by the presence or absence of garbage on the streets, sidewalks, frontage of households and structures, canals, vacant lots and waterways. The monitoring checklist on *Table 5* provides a count of occurrences of things that make the area dirty. The score at the rightmost column shows the items that are prevalently seen in each street. Thus, based on the sample filled out monitoring checklist, the most common problem in the barangay is the presence of piles of scattered garbage followed by the litter (litter is defined as one liter of garbage that is scattered). The bottom score indicates the total number of occurrences in the area. The higher the score, the dirtier the area, thus, the scores can be compared to show which street is the dirtiest. In the sample checklist (*Table 4*) presented, the dirtiest street is Araro followed by Arellano. On *Table 5*, the total score of 12 is considered Delightfully Clean.

Table 4. Sample Filled-out Monitoring Checklist on Level of Cleanliness

What can be seen in the area or street	Zobel de Roxas	South Super Highway	Arellano	Araro	Score
1. Litter	1	2	3	4	10
2. Piles or scattered garbage	0	5	3	3	11
3. Garbage bins w/o cover	1	0	0	3	4
4. Bins w/ overflowing garbage	1	0	1	2	4
5. Canals or drains with litter/garbage	2	0	0	2	4
6. Animal droppings	0	0	2	2	4
7. Junk vehicles	0	0	1	1	2
8. Bulk waste or construction debris	0	0	1	1	2
9. Soil/sand mounds	0	0	0	0	0
10. Floating garbage along estero	0	0	1	2	3
TOTAL SCORE OF AREA	5	7	12	20	44

Note: The scoring system may be fine tuned after initial implementation and evaluation.

Table 5. Evaluation of Level of Cleanliness and Orderliness

Level	Score	Description
5	0	Sparkling Clean
4	1-25	Delightfully Clean
3	26-50	Satisfactorily Clean
2	51-75	Dirty Ugly Area
1	76 and more	Yucky Area

5.2 Waste Diversion

RA 9003 has set the target of 25% diversion goal in five years or starting from the time the law became effective. This will be in 2006.

The diversion target set for this program is 15% in 2005. Measurement of the recovered amount will be based on the recyclable materials delivered to the MRF and/or sold to Junkshop buyers.

This will be achieved through the implementation of segregation at source and separate collection.

5.3 Frequency of Collection

As already programmed or determined, the frequency of collection by the primary collectors in the designated routes shall be recorded and evaluated against the agreed schedule.

Likewise, the frequency of collection of the secondary collectors (LGU) shall also be recorded and evaluated against agreed schedules.

The impact of the actual frequency of collection on the level of cleanliness and waste reduction shall be evaluated.

5.4 Enforcement

The sharp increase of apprehended violators during the initial stage of implementation is understandable. However, the sustained increase may imply that something may be wrong somewhere, e.g., the collection schedules are not followed consistently, the collectors mixed again source segregated waste, there was no IEC disseminated in the area where the problem occurs, etc.

6. Documentation and Reporting

Documentation entails the recording of events in the form of minutes of meetings, attendance sheets, receipts, field inspection reports, photo documents, chronology of events and regular reports. The records store the "story" of the project that provides the lessons that may help in assessing what practices are effective that may be worth replicating in other similar situations. Documentation also means the proper use of forms to be filled out, e.g., monitoring forms for level of cleanliness, issuance of tickets to apprehended violators, etc.

VIII. Equipment and Supplies Requirement

Table 6 lists the materials and supplies required in the activities.

Table 6. List of Supplies and Equipment

Items	No. of Units	Source
Satobin	1	Jica
Wooden Pushcart	1	Jica
Dustpan	4	Jica
Roller bins	1	Jica
Gloves	8	Jica
Boots	5	Jica
Water pails	2	Jica
Stick brooms	10	Jica
Shovels	2	Jica
Rakes/kalaykay	2	Jica

IX. Action Plan

Table 7. Schedule of Implementation

Activities	Schedule
1. Formal Entry	May 26, 2004
2. Organization of Working Group: BEM-ESTERO, HOA Coordinators	June 2004
3. Constitution of the Barangay Solid Waste Management Committee	December 2004
4. Planning Workshops	June-August 2004
5. Preparation of the BSWMP (including approval of the Barangay Council)	December 2004
6. Preparation of IEC Materials	December 2004
7. Launching Activity/Clean up day including distribution of initial IEC Materials	January 2005
8. Implementation	February 2005
9. Monitoring and Evaluation	February and onwards
10. Conduct of Survey to determine knowledge, attitude, practice and level of participation	June 2005

Chronology of Activities of Experimental Research

Barangay Palanan, Makati City		
Date	Title	Place
May 26	Explanation Experimental Research to Makati City Government	Makati City Hall
June 3	Explanation of Experimental research to Barangay Chairman of Brgy. Palanan	Brgy Palanan Hall, Makati City
June 9	Data Gathering - Barangay Profile	Brgy Palanan Hall, Makati City
June 12-14	Training Program for BEM and Team ESTERO	Great Eastern Hotel and Aberdeen Court, DPWH Central, Tripa de Gallina Pumping Station, Calatagan Creek, Brgy. 24 South Cembo, Estero de Tripa de Gallina, Pier 17 Dumpsite
June 19	Site Inspection	Zobel Roxas and Tramo
June 25	Training Workshop for BEM and Team ESTERO	Max's Restaurant, Greenbelt, Makati City
July 3	Stakeholder Analysis and SWOT Analysis Demonstration	Barangay Hall Conference Room
August 5	Following-up of Program Proposals for each Focal Point (SWM, Beautification and Greening, Pollution Control, and IEC)	Barangay Palanan Hall, Makati City
August 24	IEC Workshop	Barangay Palanan Hall, Makati
September 8	Monitoring	Barangay Palanan, Makati City
October 16	Presentation General Rehearsal	Barangay Palanan Hall, Makati City
October 20	Presentation Final Rehearsal	Barangay Palanan Hall, Makati City
October 22	2 nd Barangay Cluster Workshop	Traders Hotel, Manila
October 28	Site Visit	Barangay Palanan, Makati City
December 9	Evaluation Monitoring – Knowledge, Attitude, and Practices Survey for BEM-ESTERO Team	Barangay Palanan Hall, Makati City
January 22	Site Visit	Barangay Palanan, Makati

EXPERIMENTAL RESEARCH FOR DRAINAGE SYSTEM IMPROVEMENT IN THE CORE AREA OF
METROPOLITAN MANILA

Barangay Profile
Barangay Palanan, Makati City

1. History

In the early fifties, Barangay Palanan was sparsely populated. Latest record show that Palanan population has reached 40, 000 and with more and more business being set up along our main roads such as Filmore, Dian, and Bautista Streets, our Barangay is fast becoming a business center as well as being a residential community.

The barangay, through the support of past and present Municipal/City Mayors has accomplished the following Projects:

- Public faucets for potable water supply specially for depressed areas;
- Mini playground located at the Barangay compound, beside the Nursery School;
- Renovation of Palanan Barangay Hall;
- Waiting sheds along Bautista Street;
- Purchase of sound system for social and cultural activities;
- Two (2) Health Centers located along Diesel and Casino Streets; and
- Basketball Court - now under the management of the City Government

2. Physical Profile

2.1 Geography

2.1.1 Location

- Northwestern of Makati City

2.1.1.1 Boundaries

- ❖ North - Manila/Zobel Roxas Street
- ❖ South - San Isidro/Gil Puyat Avenue
- ❖ East - San Antonio/Estero de Tripa de Gallina
- ❖ West - Pasay City/South Superhighway

2.1.2 Land Area

- 65.6 hectares

3. Organizational Structure

3.1 Administrative Services

3.1.1 Barangay Council

Hon. Arnold C. Magpantay	- Barangay Chairman
Hon. Ernesto T. Cruz	- Barangay Kagawad
Hon. Ma. Kristine A. Yulo	- Barangay Kagawad
Hon. Glenn C. Banguis/Nelly Banguis	- Barangay Kagawad
Hon. Imelda G. Gutierrez	- Barangay Kagawad
Hon. Rogelio M. Arevalo	- Barangay Kagawad
Hon. Miguelito P. Bernal, Jr.	- Barangay Kagawad
Hon. Rosita M. Erese	- Barangay Kagawad

Mr. Jayson T. Villa
Mr. Sergio R. Poco
Atty. Jose Ma. Q. Austria

- SK Chairman
- Barangay Treasurer
- Barangay Secretary

3.1.2 Committees

- | | |
|---|---------------------------------|
| 3.1.2.1 Committee on Peace and Order | - Hon. Miguelito P. Bernal, Jr. |
| 3.1.2.2 Committee on Livelihood | - Hon. Imelda G. Gutierrez |
| 3.1.2.3 Committee on Appropriations | - Hon. Rogelio M. Arevalo |
| 3.1.2.4 Committee on Health and Sanitation | - Hon. Rosita M. Erese |
| 3.1.2.5 Committee on Education | - Hon. Nelly Banguis |
| 3.1.2.6 Committee on Cultural Affairs | - Hon. Ernesto T. Cruz |
| 3.1.2.7 Committee on Clean and Green | - Hon. Ma. Kristine A. Yulo |
| 3.1.2.8 Committee on Sports and Youth Development | - SK Chair Jayson T. Villa |

3.2 Budget and Expenditures

- o Please see attached Development Plan (2004)

3.3 Project and Programs

- o Peace and Order Campaign
- o Clean and Green Project/Garbage Monitoring
- o Anti-Illegal Drug Watch/Operations
- o Street Signs
- o Painting of Street Corners/de-clogging of canals
- o Health and Nutrition Program in cooperation with the Health Center's Personnel

4. Socio-economic Conditions

4.1 Population

- o 40,350 (as of 2001)

4.2 Number of Households

- o 16,589 households

4.3 Income Level Population

- o High Income Level - 15% (6,052)
- o Middle Income Level - 54% (21,789)
- o Low Income - 31% (12,509)

4.4 Land Use

- o Residential - 41.84%
- o Commercial - 13.92%
- o Institutional - 0.03%
- o Industrial - 0.97%

- Open Space - 1.80%
- Roads - 38.44%

4.5 Social Environment

4.5.1 Cultural Practices

- 5 Manghihilot
- 1 Albularyo
- Pabasa, Cenaculo
- Fiesta (Singing and Dancing Contests, Sidecar Racing, Tour to Barangay Palanan)

4.5.2 The Roles of Women, Youth, and Elderly

4.5.2.1 Women

- ❖ Members of Organization Women Watch (counsels troubled couples)
- ❖ Barangay and Church Livelihood Programs

4.5.2.2 Youth

- ❖ Sangguniang Kabataan Sports Leagues (Basketball, Volleyball, Chess Tournaments)
- ❖ Anti-drug Campaign
- ❖ Feeding Program

4.5.2.3 Elderly

- ❖ Participating in Barangay and Church Activities
- ❖ Members of Barangay's Lupon ng Tagapamayapa

4.5.3 Education

- Palanan Elementary School (Students are privileged of free bag, notebooks, textbooks, workbooks, pad papers, pencils, ballpens; the school is also provided with a Computer Room)
- Barangay Day Care Center
- Bethany Bett's Nursery

4.5.4 Health

4.5.4.1 Birth Rate - 114

4.5.4.2 Mortality - 49

4.5.4.3 Morbidity

- ❖ 6 bedridden persons
- ❖ Colds
- ❖ Cough
- ❖ Fever
- ❖ Influenza
- ❖ Toothache

4.5.4.4 Nutrition

- ❖ Feeding Program
- ❖ Health Workers visit the households

4.5.4.5 Health Facilities

- ❖ Palanan Bagong Lipunan Center
- ❖ Palanan Puericulture Center
- ❖ St. Claire Hospital
- ❖ Private Clinics (Balbido, Gestopa, others)

4.5.5 Sanitation

4.5.5.1 Solid Waste Management

- ❖ City Government supports the Barangay Programs
- ❖ Regular garbage collection
- ❖ Residents are being reminded of the Waste Segregation Program

4.5.5.2 Water Supply

- ❖ Maynilad Water Services, Inc.

4.5.5.3 Sewage and Toilet Facilities

- ❖ Drainage lines
- ❖ Estero

4.5.6 Community Infrastructure

4.5.6.1 Transportation

- ❖ Trucks
- ❖ Jeeps
- ❖ Cars
- ❖ Motorcycles
- ❖ Sidecars

4.5.6.2 Electricity

- ❖ Meralco

4.5.6.3 Recreation

- ❖ Billiard Hall
- ❖ Basketball
- ❖ Volleyball

4.5.7 Peace and Order

- Police assistance
- Bantay Bayan
- MAPSA
- Other volunteer organizations preventing crime

5. Environmental Conditions

5.1 Water Environment

5.1.1 Esteros

- The water is still flowing but there are garbage alongside the banks

5.1.2 Drainage System

- There are some drainages that are not clogged
- Those clogged drainages have been declogged by the Engineering Office of Makati

5.2 Land Environment

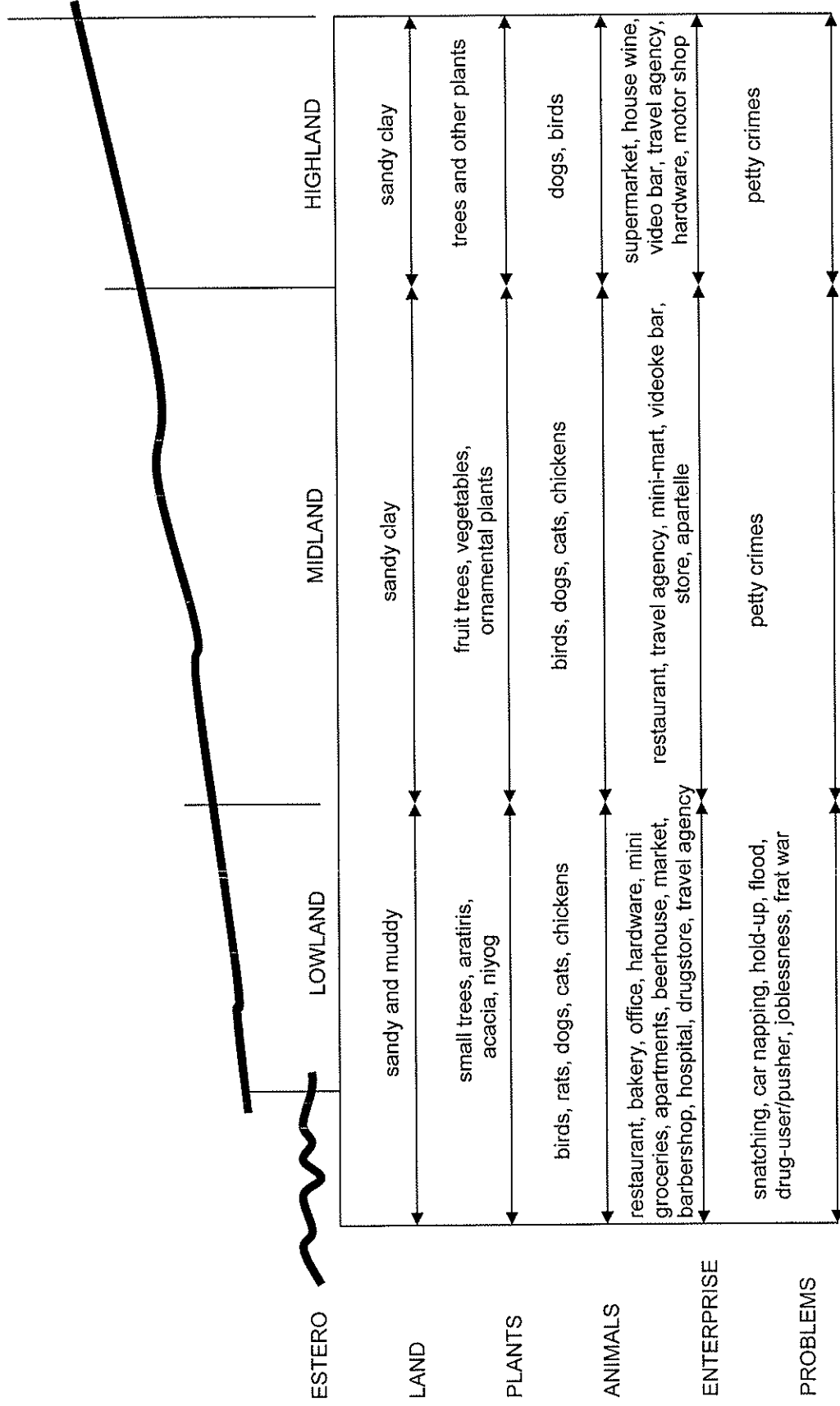
5.2.1 Vegetation

- There are plants in some houses

5.2.2 Birds and Animals

- Pet birds
- Dogs
- Cats

BARANGAY PALANAN, MAKATI CITY TRANSECT MAP



Attachment - A

BARANGAY DEVELOPMENT PLAN
Calendar Year 2004

- a. Name of Barangay PALANAN
- b. District I
- c. Population 40,000
- d. Land Area 64.5 Hectares
- e. Dominant Land Use Residential/Commercial

Project Category	Name of Project	Location	Project Output & Benefits	Project Cost				Funding Source	Period of Implementation	REMARKS
				Labor	Materials	Equipment	Others			
PEACE & ORDER	a. Barangay Laban sa Krimea	Barangay-wide	Maintain Peace & Order in the Brgy, through 13 Bantay Bayan and 5 Brgy Action Man	280T				MOOE 1.2(v.1)	Jan. 1 - April 31	PHASE I In coordination with the Makati Anti-Drug Abuse Council
	b. Professional Skills Enhancement	Los Baños, Laguna	Enhancement of skills and competence of 13 Bantay Bayan and 12 Lupon Members				50T	MOOE 1.2(b)	Jan.	
	c. Barangay Laban sa Droga	Barangay Wide	To reduce cases of illegal drug activities				200T	MOOE 1.2 (u.1)	Jan. - Dec.	
	d. Barangay Council for the Protection of Children	Barangay Wide	Promotion and protection of childrens welfare				50T	MOOE 1.2(u.3)	Jan. - Dec.	
CLEANLINESS & BEAUTIFICATION	a. Kalirisan sa Barangay	Barangay-wide	Maintenance of cleanliness in the Brgy by 13 Tag-linis	156T				MOOE 1.2 (v.4)	Jan. 1-April 31	PHASE I
HEALTH & SANITATION	a. Bantay Kalusugan sa Barangay	Barangay-wide	Promote, monitor, and sustain healthy living of (300) elderly and (900) indigent families by 5 Brgy. Health Workers	72T				MOOE 2.1 (v.2)	Jan. 1 - April 31	PHASE I
EDUCATION & CULTURE	a. Brgy. Computer Center	Casino St.	Computer learning enhancement of 4,000 constituents thru conduct of training on basic computer operation.	30T				MOOE 1.2(v.3)	March - May	In cooperation with Liga

Project Category	Name of Project	Location	Project Output & Benefits	Project Cost				TOTAL	Funding Source	Period of Implementation	REMARKS
				Labor	Materials	Equipment	Others				
b.	Gawad Pagkilala	Barangay-wide	Recognition of deserving 100 students through rewards/incentives	20T				20T	MOOE 1.2(v.3)	March - April	PHASE I
				60T				60T	MOOE 1.2 (v.3)	Jan. 1-April 31	
c.	Ating Alamin	Barangay-wide	Development and enhancement of the constituents' well being through 5 zone coordinators								
INFRASTRUCTURE											
a.	Friendship Road (Cluster Project)	P. Binay St., Faraday, Batangas & Filmore	100 % beautification of P. Binay St., Faraday, Batangas, and Filmore which includes the installation of street light and painting of sidewalks	700T				700T	SB	April - Dec.	In coordination with Brgys. Bangkal, Pio del Pilar, San Isidro
b.	Traffic Signs Phase I	Filmore, Dian Bautista Emilia, Dayap,	Installation of 150 Units traffic signs to improve traffic flow.	250T				250T	C.O. (2.a)	Feb. - April	
c.	Street Barriers Phase II	Filmore, Arellano and Bautista Sts.	Installation of 10 Units Street Barriers to improve traffic flow.	200T				200T	C.O. (2.a)	Feb. - April	
e.	Paluwagan ng Bayan (for developmental projects)	City-Wide	Pooling of financial resources to fund development projects that will benefit the constituents					560T	SMO II-A-3		

BARANGAY DEVELOPMENT PLAN
for Supplemental Budget No.1
Calendar Year 2004

- a. Name of Barangay **PALANAN**
- b. District **I**
- c. Population **40,000**
- d. Land Area **64.5 Hectares**
- e. Dominant Land Use **Residential/Commercial**

Project Category	Name of Project	Location	Project Output & Benefits	Project Cost			TOTAL	Funding Source	Period of Implementation	REMARKS
				Labor	Materials	Equipment				
PEACE & ORDER	a. Barangay Laban sa Krimen	Barangay-wide	Maintain Peace & Order in the Brgy, through 15 Bantay Bayan and 5 Brgy Action Man	658,750.00			658,750.00	MOOE 2.7(a)	May 1 - Dec. 31	PHASE II In coordination with the Makati Anti-Drug Abuse Council
CLEANLINESS & BEAUTIFICATION	a. Kalinisan sa Barangay	Barangay-wide	Maintenance of cleanliness in the Brgy by 13 Tag-linis	348,500.00			348,500.00	MOOE 2.7(c)	May 1 - Dec. 31	PHASE II
HEALTH & SANITATION	a. Bantay Kalusugan sa Barangay	Barangay-wide	Promote, monitor, and sustain healthy living of (300) elderly and (900) indigent families by 5 Brgy. Health Workers	153,000.00			153,000.00	MOOE 2.7(b)	May 1 - Dec. 31	PHASE II
PROJECT MONITORING	c. Ating Alamin	Barangay-wide	Development and enhancement of the constituents' well being through 5 zone coordinators	153,000.00			153,000.00	MOOE 2.7(d)	May 1 - Dec. 31	PHASE II

**Experimental Research for the Study on Drainage Improvement in Core Area of
Metropolitan Manila**

Barangay Council of Barangay Palanan, Makati City

Hon. Arnold C. Magpantay	- Barangay Chairman
Hon. Ernesto T. Cruz	- Barangay Kagawad
Hon. Ma. Kristine A. Yulo	- Barangay Kagawad
Hon. Glenn C. Banguis/Nelly Banguis	- Barangay Kagawad
Hon. Imelda G. Gutierrez	- Barangay Kagawad
Hon. Rogelio M. Arevalo	- Barangay Kagawad
Hon. Miguelito P. Bernal, Jr.	- Barangay Kagawad
Hon. Rosita M. Erese	- Barangay Kagawad
Mr. Jayson T. Villa	- SK Chairman
Mr. Sergio R. Poco	- Barangay Treasurer
Atty. Jose Ma. Q. Austria	- Barangay Secretary

**Experimental Research for the Study on Drainage Improvement in Core Area of
Metropolitan Manila**

The BEM-ESTERO Team of Barangay Palanan, Makati City

Barangay Environmental Manager:

Roel C. Arevalo

Team ESTERO:

Ma. Lourdes P. Cambosa

Ryan C. Amante

Emmanuel B. Alivio, Jr.

Gilda N. Garte

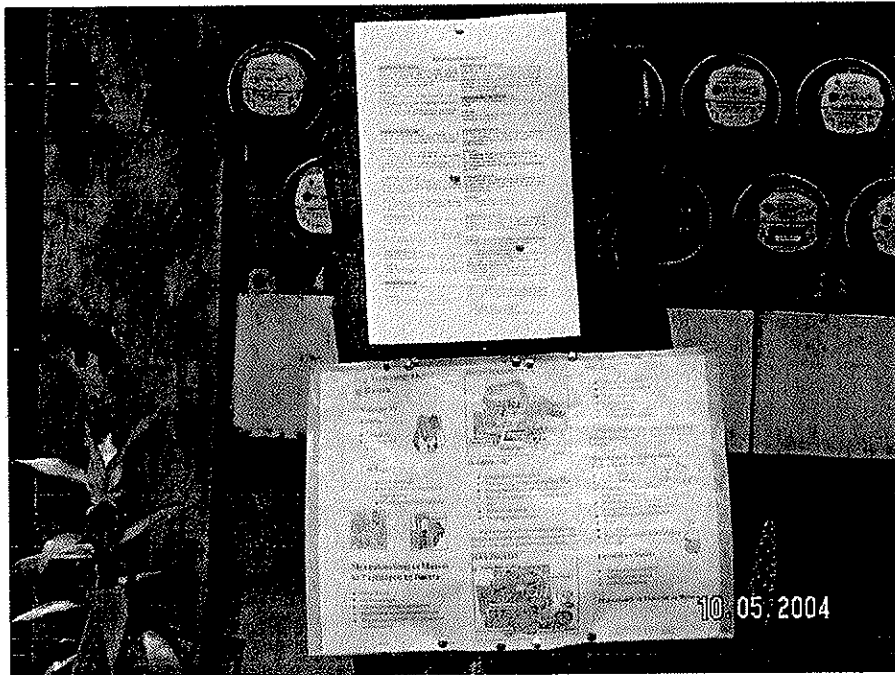
Renieboy O. Mocooy








Alfie S. Inigo

Sonia O. Mariño

Experimental Research for the Study on Drainage Improvement in Core Area of Metropolitan Manila

IEC Materials Used by Barangay Palanan, Makati City



<p>Mga Alasamang Dulot ng Basura</p> <p>Sa Kalusugan Mo</p> <ul style="list-style-type: none"> • Maging maingat sa paglalagay ng basura. • Maging maingat sa paglalagay ng basura. • Maging maingat sa paglalagay ng basura. 	<p>IBIGI-NABIBIGLON</p> 	<p>Nanubolok!</p> <ul style="list-style-type: none"> • Maging maingat sa paglalagay ng basura. • Maging maingat sa paglalagay ng basura. • Maging maingat sa paglalagay ng basura. <p>Ang mga basura ay hindi dapat magamit bilang basura sa ibang lugar.</p>
<p>Sa Kapaligiran Mo</p> <ul style="list-style-type: none"> • Maging maingat sa paglalagay ng basura. • Maging maingat sa paglalagay ng basura. • Maging maingat sa paglalagay ng basura.  	<p>Desalinisasyon</p> <ul style="list-style-type: none"> • Maging maingat sa paglalagay ng basura. • Maging maingat sa paglalagay ng basura. • Maging maingat sa paglalagay ng basura. <p>Ang mga basura ay hindi dapat magamit bilang basura sa ibang lugar.</p>	<p>Magandang at Nakatutuwag (at ito ay hazardous)</p> <ul style="list-style-type: none"> • Maging maingat sa paglalagay ng basura. • Maging maingat sa paglalagay ng basura. • Maging maingat sa paglalagay ng basura.  
<p>Mga pakinabang sa Maayos na Pagtatapon ng Basura</p> <ul style="list-style-type: none"> • Maging maingat sa paglalagay ng basura. • Maging maingat sa paglalagay ng basura. • Maging maingat sa paglalagay ng basura. 	<p>SIABUGLON</p> 	<p>Espesyal na Basura</p> <ul style="list-style-type: none"> • Maging maingat sa paglalagay ng basura. • Maging maingat sa paglalagay ng basura. • Maging maingat sa paglalagay ng basura. <p>Magandang at Espesyal na Basura</p>

MGA ORDINANSA SA BASURA**ORDINANSA BLG. 2002-05**

Bawal ang pagtatapon ng basura, papel, upos ng sigarilyo at anumang kalat sa kalsada, gusaling pampubliko o saan mang pag-aari ng pamahalaan. Kasama na ang mga kanal, estero, sapa, o ilog na hindi sadyang nakatalaga bilang tapunan nito.

PARUSA:

1. Paglabag: Pagdalo sa isang seminar at multa ng Php500.00
2. Paglabag: Walong oras na paglilingkod sa gobyerno o mylat ng Php1,000.00
3. Paglabag: Multa ng Php2,000.00 o pagkabilanggo ng hindi bababa sa 5 araw o pareho ayon sa hukuman.

ORDINANSA BLG. 93-299

Kailangan paghiwalayin ang mga basurang tuyo at puwede pang gamitin uli o recyclable sa mga basa at hindi na maari pang pakinabangan muli o non-recyclable.

PARUSA:

1. Paglabag: Pagdalo sa isang seminar
 2. Paglabag: Pagdalo sa seminar at multa ng hindi hihigit sa Php1,000.00
- Paglabag: Multa ng hindi hihigit sa Php2,000.00 o pagkabilanggo ng di bababa sa 5 araw o pareho ayon sa pasya ng hukuman.

ORDINANSA BLG. 90-264

Inutusan ang lahat ng mayari, nagpapaupa, at nangungupahan ng bahay, apartment o anumang gusaling komersiyal na panatilihin malinis ang harap ng kanilang mga bakuran.

PARUSA:

Multa ng Php100.00 hanggang Php500.00 o ibibilanggo ng 3 araw hanggang 1 buwan o pareho ayon sa igagawad ng hukuman.

ORDINANSA BLG. 93-111

Ang lahat ng mayari ng bakanteng lote ay inutusan na lagyan ng bakod ang paligid nito.

PARUSA:

Multa ng hindi bababa sa Php2,000.00 o pagkabilanggo ng hindi bababa sa 5 araw o higit sa 1 taon o pareho ayon sa igagawad ng hukuman.

ORDINANSA BLG. NO. 106

Ipinagbabawalan ang paninigarilyo sa loob ng pampublikong sasakyan tulad ng dyip, bus at taxi.

PARUSA:

Multa ng hindi hihigit sa Php100.00 o ibibilanggo ng hindi bababa sa 20 araw o pareho ayon sa igagawad ng hukuman.

ORDINANSA BLG. 99

Ipinagbabawal ang pagdura, pag-ihing sa pampubliko at pribadong lugar sa Makati.

PARUSA:

Multa ng hindi bababa sa Php300.00 at kung walang pambayad ay makukulong ng 1 hanggang 3 araw.

ORDINANSA BLG. NO. 99-052

Ang mga may-ari ng sira/nakatambak/abandonandong sasakyan ay bibigyan ng 7 araw na palugit upang alisin ang kanilang sasakyan at binibigyan pahintulot ang pamahalaang Lungsod ng Makati na tio ay isusubastang pamgayan, sa Kiharoroonan ng nabanggit na sasakyan kung ang may-ari ay magwalang bahala na ito ay alisin sa loob ng 7 araw na palugit.

ORDINANSA BLG. NO. 96-009

Ipinagbabawal ang pagtatapoon ng basura sa gabi sa Makati.

PARUSA:

Multa ng hindi bababa sa Php500.00 o isang araw ng paglilingkod sa gobyerno.

ORDINANSA BLG. 94-121

Ang lahat ng may-ari/operator ay inutusan na iparehistro ang kani-kanilang mga kariton na ginagamit sa pangungulektang ng basura o anumang bagay na di na pinakikinabangan.

PARUSA:

1. Paglabag: Multa ng hindi hihigit sa Php200.00
2. Paglabag: Pagkim[piska ng kariton o multa ng hindi hihigit sa Php500.00
3. Paglabag: Multa ng Php500.00 o pagkabilanggo ng 3 araw.

ORDINANSA BLG.30

Ipinagbabawal ang pagpapalaboy ng mga hayop tulad ng aso, baboy, baka at mga kagaya nito sa anumang pampublikong daan o plaza sa loob ng nasasakupan ng Lungsod ng Makati.

PARUSA:

- 1 & 2 Paglabag: Multa ng Php50.00
3. Paglabag: Multa ng Php100.00

ORDINANSA BLG.93-330

Ipinagbabawal ang pagpaparada ng mga sasakyan at pagtatayo ng mga negosyo at mga kagaya nito sa bangketa na humaharap o humahadlang sa mga dumadaan sa pampublikong daanan.

PARUSA:

Ang mga may-ari Driver/Operator ng mmga sasakyan na nagkasala ay may kaukulang kaparusahan:

1. Paglabag: Multa ng Php200.00
2. Paglabag: Multa ng Php300.00
3. Paglabag: Multa ng Php500.00 o pagkabilanggo ng 2 araw or pareho ayon sa igagawad ng hukuman.

Ang mga negosyo at mga katulad nito na napatunayang nagkasala ay:

1. Paglabag: Pagbibigay ng babala upang alisin ang kanilang tinayoong tindahan sa loob ng 2 araw
2. Lungsod ng Makati ay may karapatang mag demolish ng nasabing tindahan.

ORDINANSA BLG. NO. 04

Lahat ng nagmamaneho/operator ng mga pampublikong sasakyan tulad ng dyip, bus, taxi at iba pang katulad nito ay inutusanang maglagay ng kani-kanilang mga basurahan sa loob nito:

PARUSA:

1. Paglabag: Multa ng Php100.00
2. Paglabag: Multa Php200.00
3. Multa ng Php500.00 o pagkabilanggo ng 3 araw.

BARANGAY PALANAN MAAASAHAN

Monitoring- Halos Nobentay singko porsiento (95.8 %) dito sa aming lugar ang hindi na nagtatapon ng basura sa Estero sa dahilang ipinaalam namin sa lahat, at kung sakali naman na akto namin silang nahuli bilang kaparusahan ay pinagsasabihan namin sila kung ano ang dapat.dahil ang katotohanan ay wala silang dahilan na masasabi sapagkat regular naman na dumadaan at nasa oras ang mga truck ng basura dito sa aming lugar.

Ang lahat ng BEM-Estero Team ay tahasan at walang sawang namamahagi ng mga liflets sa bahay-bahay upang maiwasan ang Dengue dulot ng mga nakaimbak na basura.

Barangay Palanan Maaasahan



Iwasan ang Dengue, gawin ang mga sumusunod:



Takpan ng maigi ang mga drum, timba at iba pang ipunan ng tubig upang hindi pamahayan ng *kiti-kiti*.



Palitan ang tubig ng plorera minsan sa isang linggo.



Ang mga lumang gulong na ginagamit na pabigat sa bubungán ay kailangang butasan upang hindi maipunan ng tubig.



Linisin at kuskusin ang mga gilid ng mga lalagyan ng tubig minsan sa isang linggo. Ang mga itlog ng lamok na nagling *kiti-kiti* ay kumakapit sa mga gilid nito.



Linisin ang mga alulod ng bahay upang hindi malpunan ng tubig at pamahayan ng *kiti-kiti*.

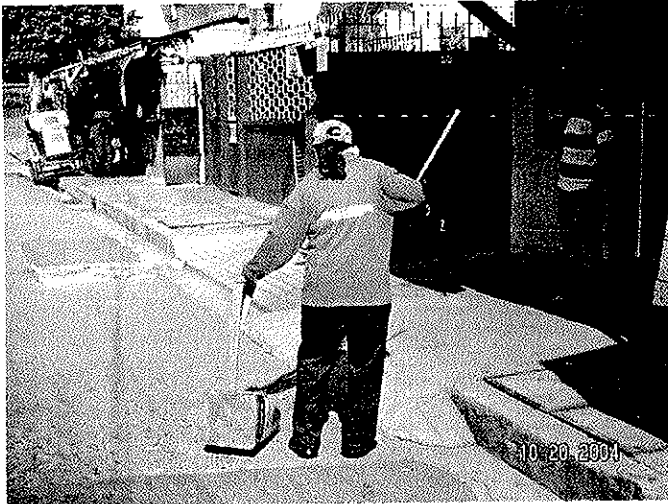


Itapon ang mga lata, bote at iba pang nakakalat sa paligid na maaaring pangitluran ng lamok kapag naipunan ng tubig.

GOODBYE KITI-KITI GOODBYE DENGUE

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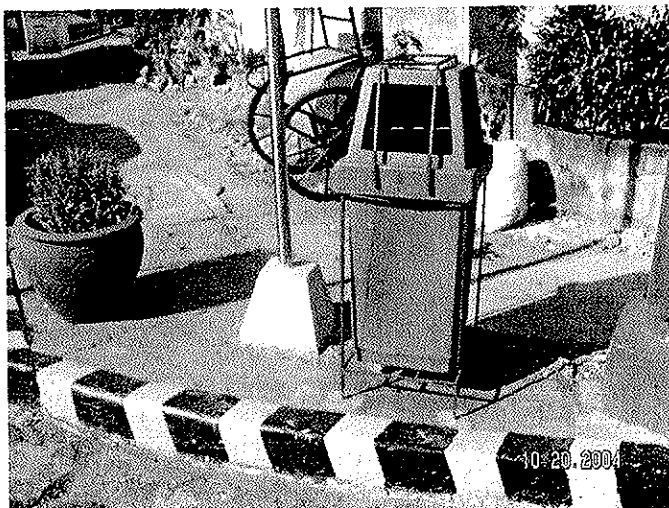
Photo Document of Barangay Palanan, Makati City



Regular schedule of street sweeping along each street of the Barangay by the Official Barangay Palanan Street Sweepers



Sidewalk Clearing Operation being implemented by the Makati City Government



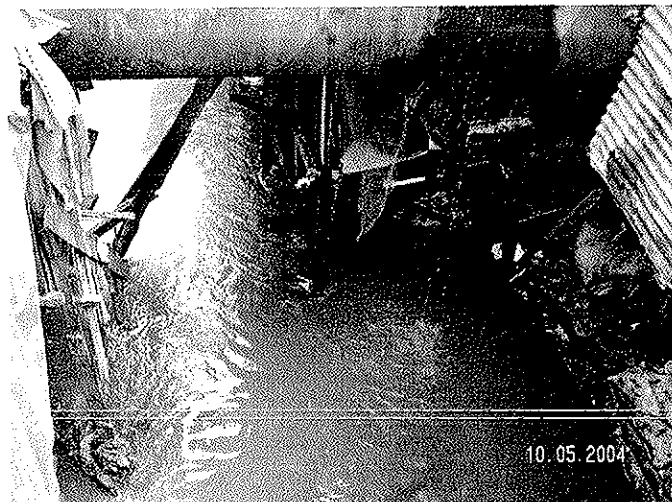
Garbage Bins were distributed in every street of the Barangay for the passers-by to dispose their litters in it

**Experimental Research for the Study on Drainage Improvement in Core Area of
Metropolitan Manila**

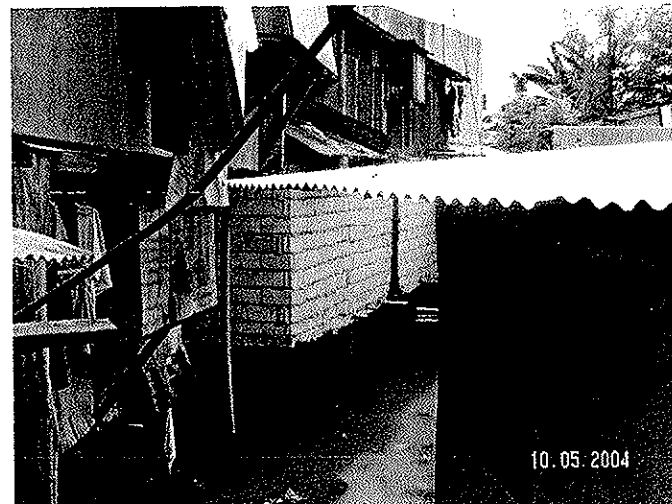
Photo Document of Barangay Palanan, Makati City



One of the junkshops within the Barangay



Current situation of Tripa de Gallina



Current situation of Tripa de Gallina

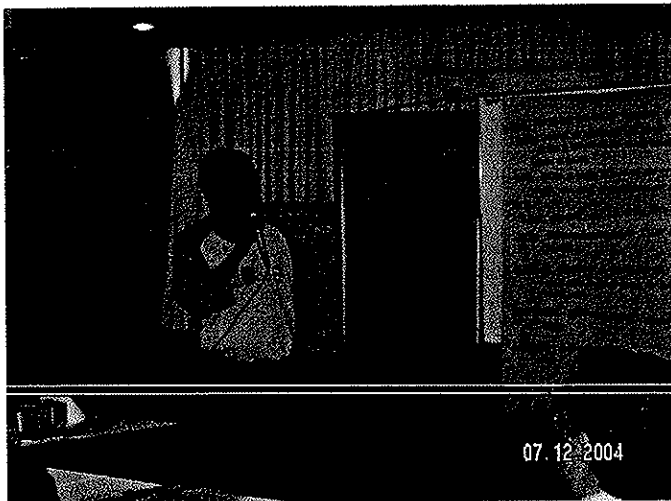
**Experimental Research for the Study on Drainage Improvement in Core Area of
Metropolitan Manila**

Photo Document of Barangay Palanan, Makati City



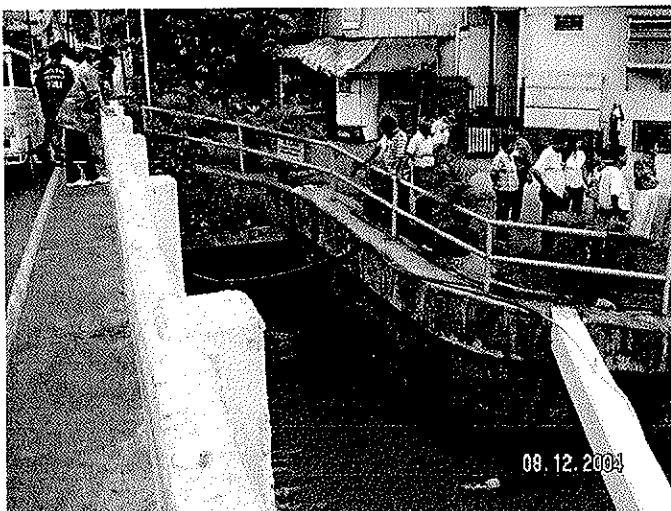
A 3-day Training Program for BEM and
Team ESTERO
*(Overview and Briefing on Experimental
Research)*

Day 1



A 3-day Training Program for BEM and
Team ESTERO
*(Overview and Briefing on Experimental
Research)*

Day 2



A 3-day Training Program for BEM and
Team ESTERO
*(Overview and Briefing on Experimental
Research)*

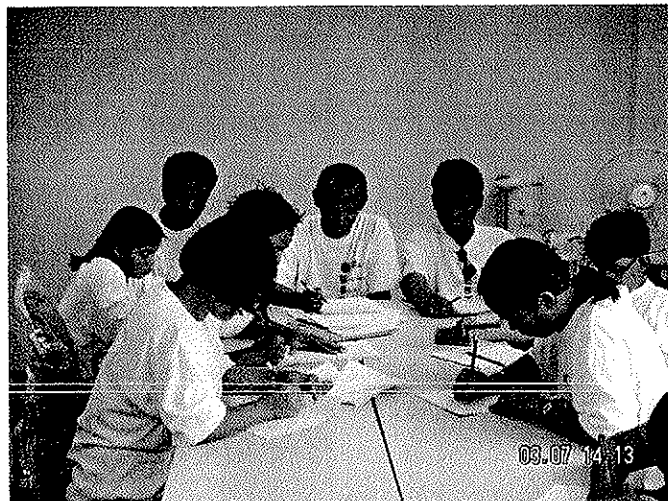
Day 3

**Experimental Research for the Study on Drainage Improvement in Core Area of
Metropolitan Manila**

Photo Document of Barangay Palanan, Makati City



Training Workshop for BEM and Team
ESTERO on Barangay Profile Writing



Stakeholder and SWOT Analyses
Workshop for the BEM and Team
ESTERO



Information, Education, and
Communication (IEC) Workshop

**Experimental Research for the Study on Drainage Improvement in Core Area of
Metropolitan Manila**

Photo Document of Barangay Palanan, Makati City



Knowledge, Attitude, and Practices
(KAP) Survey for the BEM-ESTERO
Team

A SIMPLE, COMMONSENSICAL APPROACH TO ROUTING

One must first know the following:

1. Location of the collection vehicle garage or depot;
2. Location of the transfer station or final disposal site;
3. Direction of one-way streets;
4. Traffic patterns and rush hours;
5. Topography; and
6. Passable and non-passable roads.

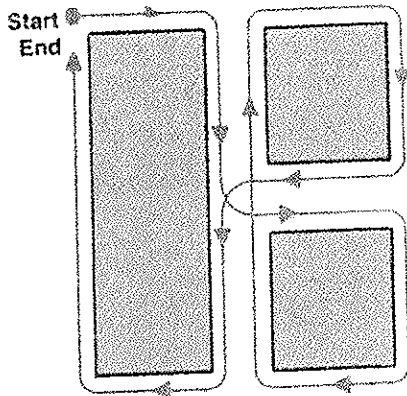
Get hold of a map of the locality; preferably one with a scale of 1:5,000. Copy the map on tracing paper, reducing it to sections corresponding to the collection districts. For each district, simplifying the road networks by omitting blind alleys, short dead-end streets, and areas that are not to be served.

Develop the most appropriate routes on a trial-error basis on the traced maps by applying the following rules:

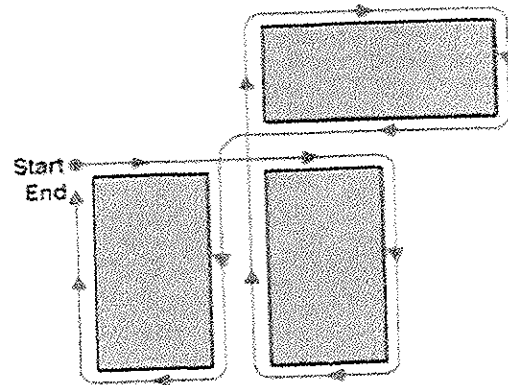
1. Routes should not be fragmented or overlapping. Each route should be compact, consisting of street segments clustered in the same geographical area.
2. The collection route should be started as close to the garage or depot as possible.
3. Do not make collections on heavily travelled streets during rush hours.
4. Services on short dead-end streets can be considered as services on the street segment that they intersect, since only passing down that street segment can collect them. Collectors walking down the dead-end street can do collection.
5. Keep left turns at a minimum to minimize the frequency of crossing the path of other vehicles. Long dead-end streets should be collected when they are to the right of the truck, either by backing up the truck or by making a U-turn at the end of the dead-end street. Left turns (counter clockwise vehicular movement) are generally more difficult, time consuming, and dangerous than right turns.
6. When practicable, collections on steep hills should be made on both sides of the street while the vehicle is moving downhill for safety, ease, speed of collection, reduced wear on the vehicle and conservation of fuel and oil. In these cases, thus the start of the route must begin in those places with higher elevation.
7. Backing up should be kept at a minimum.

8. Do not bother with streets where there is no garbage to be collected.
9. The collection route should be ended as close as possible to the waste's final destination (transfer station, processing facility, or landfill site).
10. For collections on both sides of the street at the same time, it is best to route with long, straight paths along the grid before looping clockwise
11. Streets should be travelled twice only if collections are made on one side at a time. Where collections are made on both sides simultaneously, streets should be travelled only once.
12. For certain block configurations within the route, and in the case of collection on one side of the street a time, the following routing patterns may be applied:

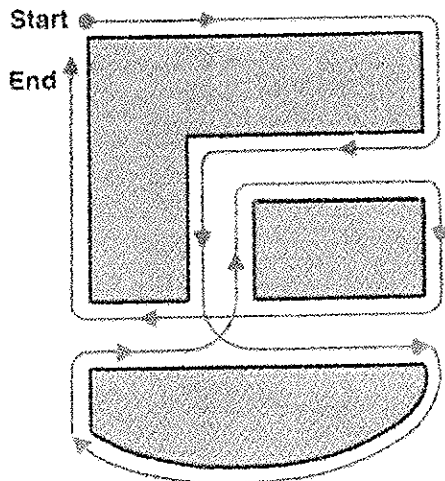
A3-BLOCK ROUTING CONFIGURATION



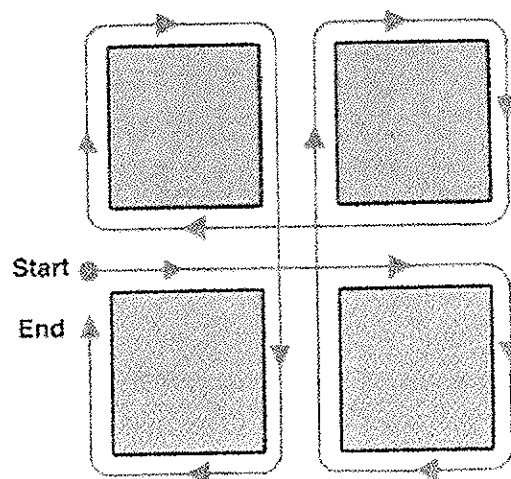
A VARIATION OF THE 3-BLOCK ROUTING CONFIGURATION



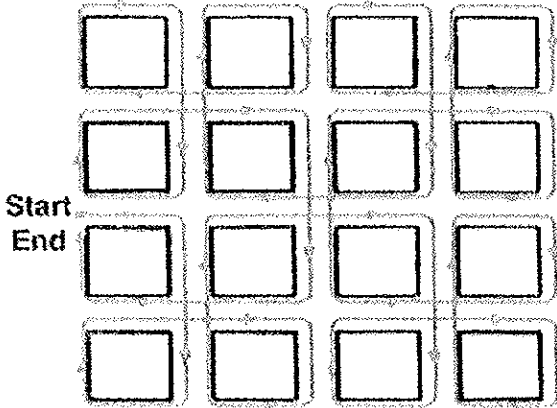
ANOTHER VARIATION OF THE 3-BLOCK ROUTING CONFIGURATION



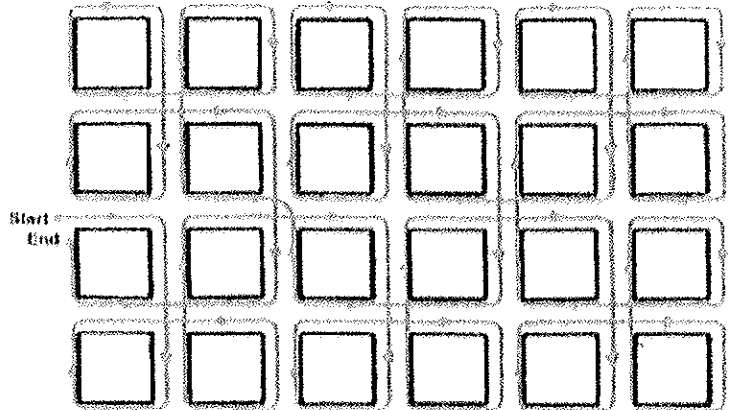
A 4-BLOCK ROUTING CONFIGURATION



4X4 BLOCK ROUTING CONFIGURATION
No Left Turns, No Unused Travel
Distance



4X6 BLOCK ROUTING CONFIGURATION
No Left Turns, No Unused Travel
Distance



6X8 BLOCK ROUTING CONFIGURATION
One Left Turn, No Unused Travel
Distance

