

City SWM Major Projects/Initiatives

A. Engineered Landfill Project

(Clay Liner Technology)

10 has landfill facility with the following features:

- a. 2 cells (good for 15 years)
- b. leachate collection system
- c. wastewater treatment system
- d. material recovery facility
- e. low cost liner facility

Total Project Cost: 163M

(Payable in 15 years to the Department of Finance's LOGOFIND funded by the WB)



Earthworks









Main Entrance

Perimeter Fence

Stormwater Pond #4

Operations Compound

- New admin Bldg.
- Weighbridge
- Wheel wash
- Fuel Storage Area
- Parking Area
- Unacceptable Waste Area

Leachate Treatment Pond

North Cell

Public Access Road (west side)

Stormwater Pond #3

KEY PLAN

South Cell

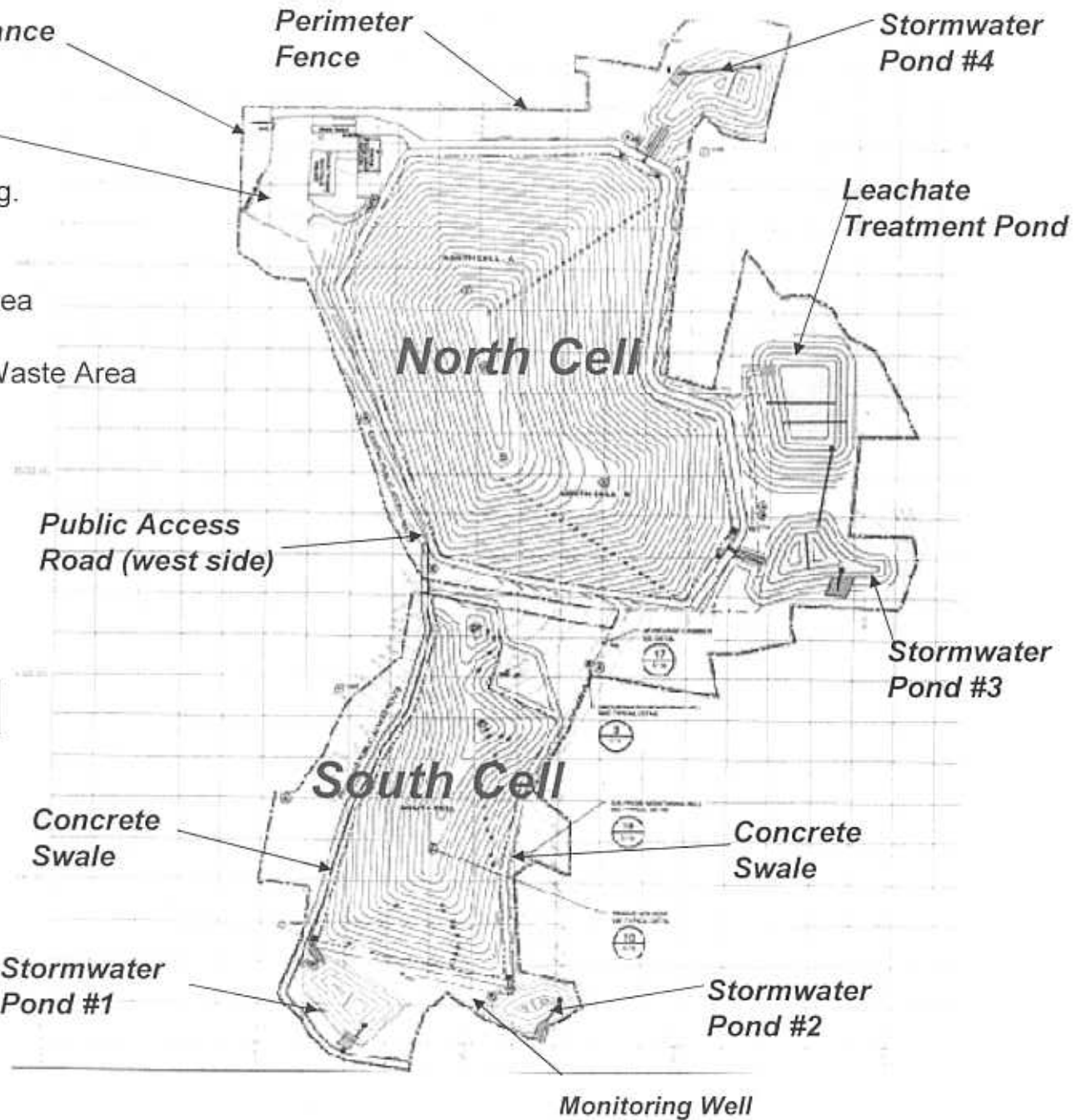
Concrete Swale

Concrete Swale

Stormwater Pond #1

Stormwater Pond #2

Monitoring Well



Weighbridge Facility

(Truckscale and Truckscale House not yet operational)



viewed from site main entrance

Existing Office Building:



New Administration Building:



Nov. 29, 2006

Excavation & Transfer of Old Waste from the Existing Facility



Viewed from east side of Existing Facility overlooking the Administration Bldg

Excavation & Transfer of Old Waste from the Existing Facility
About 62,000 m³ (loose volume) of old waste - equivalent compacted volume estimated at 42,000 m³ - have been transferred to New Facility from Nov.22 to Dec.31,2006



another view from north end of property

Leachate Extraction System:
*(Fused HDPE extraction pipes
- photo taken Sept.2006)*



South Cell Leachate Collection System

(2nd layer of filter cloth placed on top of gravel bed; HDPE pipes and filter cloth at sta. 0+170 to 0+180 still outstanding)



Surface Water Management :

(Concrete Swales completed along west and east sides of South Cell; Grass Swale south of South Cell is outstanding; ongoing excavation for chain link fence also shown)



Operation of New Facility (South Cell)
(Compaction by sheepfoot of old waste deposit)



viewed from northeast of the Facility near TransCo tower)

Operation of New Facility (South Cell)
(Spreading of old waste deposit at concrete-grass swale transition at northeast of the New Facility)



viewed from northeast of the Facility near TransCo tower)

Operation of New Facility – Leachate Management

(Leachate pipe shown discharging leachate inside the South Cell's Pumping Station Chamber; regular monitoring of leachate quantity is being done by the Operator)



viewed from top of the pumping station chamber

Leachate Treatment System

(1st retaining wall of the leachate treatment pond shown concreted; partial clay backfill to base footing also shown)



viewed from top of berm west side of leachate treatment pond

Leachate Treatment System

(Formworks shoring for concreting of 2nd retaining wall of the leachate treatment pond also shown being installed)

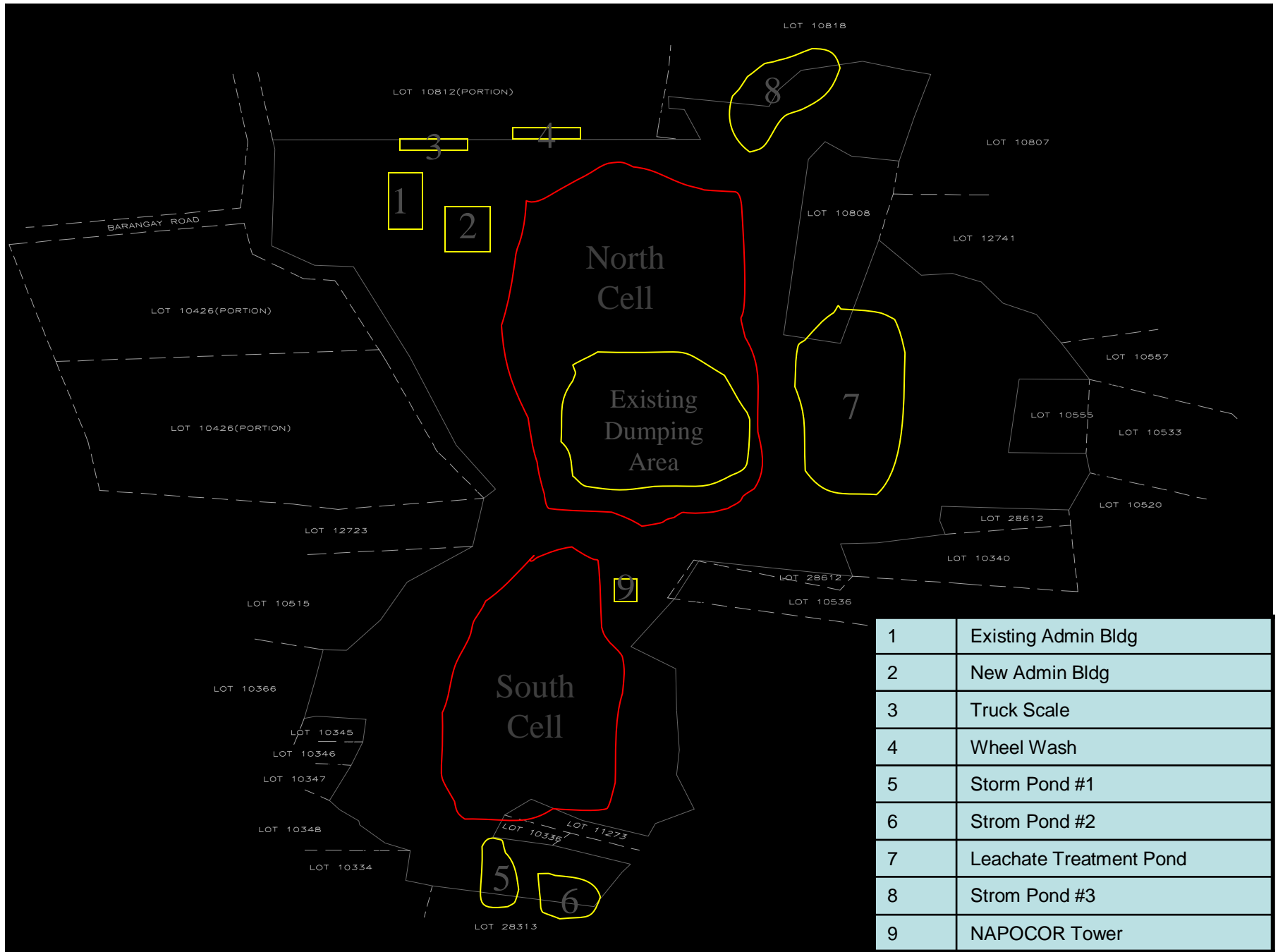


viewed from top of berm west side of leachate treatment pond

Leachate Transfer System (for South Cell)
*(Pump House constructed south end of the New Facility;
a 3-HP explosion-proof pump has been installed inside)*



viewed from southeast corner of New Facility



Barangay/ Village-based Materials Recovery Facility

- **Barangay Ordinance No. 01-03 (Lingsat)**
“An Ordinance Establishing an Integrated Solid Waste Management in Barangay Lingsat”

Lingsat (2004) Lingsat Individual MRF (National Awardee for Barangay SWM)

Lingsat Cluster (2006) Lingsat, Carlatan, Bangkusay, Pagdaraoan and Dalumpinas Este and Oeste



Barangay Garbage Collection and Counterparting

- Counter parting schemes on trucks (P21, 000.00 each truck per barangay)
- Segregated collection
- Garbage fee collection (P30.00 per household per month)
- Barangay SWM Brigades
- Capacity building and IEC
- Barangay Clustering (5 clusters, soon to open)



BESWM Coordinators at all times ensure that all solid wastes that to be coll are properly segregated.

The Scheme on the collection of segregated solid wastes on residential houses and business establishment is a Personalized Garbage Collection, wherein the BESWM Coordinators are the one to collect the segregated solid waste inside the premises of all residential and business establishments' compound.



Barangay/ Village-based Materials Recovery Facility

- Establishment of Materials Recovery Facility in Barangay San Agustin. Composting equipment acquired through the assistance of PBSP and World Bank
- Tricycle Collection System



School-based SWM Program



Mameltac Community School produces their organic fertilizer using the rotating drum

Waste segregation containers of Catbangan Central School



School-based SWM Program



The “*Basura’y Ipunin, Bata’y Kalinganin*” Program of South Central School aims to help the education of some marginalized pupils through the recovery/sale of recyclable materials

In Dalumpinas Community School wastes materials such as tetra packs, wrappers and other plastic materials were made into novelty items (penholders, dividers, bags etc.)



City Offices SWM Practices



San Fernando City uses different waste segregation receptacles in managing its wastes: concrete receptacles, plastic receptacles with labels, bamboo crates (tiklis), mini MRF...

City – Barangay SWM Assistance Program

1. Conduct of training for Barangay WACS
2. Conduct of Barangay SWM IEC Activity
3. Conduct of Barangay SWM Consultation
4. Barangay Ordinance drafting and implementation
5. Barangay Planning
6. Barangay SWM Team capability building
7. Counterparting on procurement of Barangay Collection Truck and MRF system
8. Design on garbage fee collection management and routing system
9. City SWM Maintenance Assistance Fund
10. Barangay SWM Monitoring and Evaluation

CASE STUDY OF AN ENTREPRENEUR

- HE WAS A FARMER AND BECAME THE VILLAGE CHIEF (BARANGAY CAPTAIN)
- AS BARANGAY CAPTAIN OF THE HOST VILLAGE, I MADE HIM TAKE CARE OF THE 23 SECONDARY WASTE PICKERS
- HE CONTACTED A PLASTICS FACTORY WHEN A TRUCKLOAD OF RECYCLABLES WERE READY TO BE PICKED UP
- HE OFFERED TO TRANSPORT THE RECYCLABLES HIMSELF AND NOW HAS 3 ELF TRUCKS AND A FORWARDER
- HE BOUGHT A SHREDDER IN PREPARATION FOR PELLETIZING PLASTIC AND CAN SHIP THREE TIMES THE VOLUME PER TRIP
- HE NOW EMPLOYS 22 EMPLOYEES ASIDE FROM THE 23 SECONDARY WASTE PICKERS
- HE BUYS FROM OTHER NEIGHBORING MUNICIPALITIES
- AVERAGE INCOME OF WASTEPICKERS IS P5,000/WEEK

LGU INTERVENTION

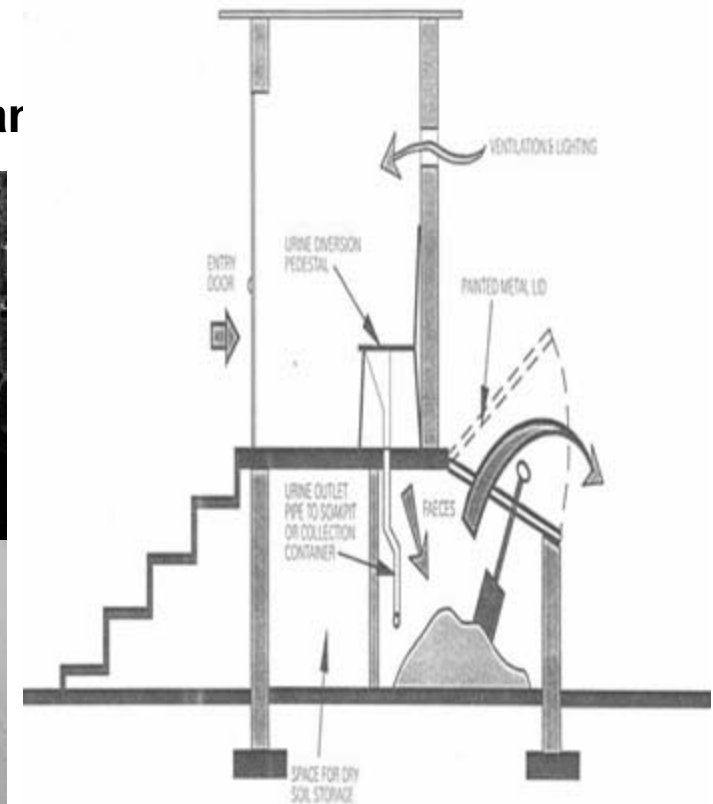
THE CITY GIVES ANNUAL CHECK UP TO WASTE PICKERS. AFTER THIS WORKSHOP, I WILL SUGGEST THAT ALL JUNKSHOP WORKERS SHOULD ALSO BE GIVEN FREE ANNUAL CHECK UPS.

THE CITY GIVES ADDITIONAL LIVELIHOOD SKILLS TRAINING AND FINANCIAL ASSISTANCE TO WASTE PICKERS.

NO SCAVENGERS ARE ALLOWED IN THE LANDFILL

ECOSAN Technology (Dry Sanitation Toilet Project)

- Urine diversion toilet that uses urine as prime soil fertilizer
- Recycles feces as compost or soil enhancer
- Promotes water conservation
- Waste recycling
- Cheaper alternative for sanitation
- Waste as business enterprise
- Pilot areas: San Agustin and Nagyubuyubar



Other Environmental Initiatives

Linis Projects

- **Green Junkshop Project**
(From three small junkshops (1997) to 18 big junkshops (2006))
- **Green Recycling and composting/gardening**
- **Adopt A Street Program**
- **Clean and Green Schools Evaluation**
- **Canal dredging**
- **Coastal clean up**

Green Projects

- **Formulation of City Environment related Ordinances and/or Environment Code**
- **1 Million Tree Project**
- **Botanical Garden**
- **Satellite Plant Nursery Projects**
- **Greenbelt and Landscaping project**
- **Mangrove Plantation Project**
- **Bamboo CLASP Project**
- **NRB Development Project**
- **Tiger grass Project**

Clean Water Project

- **Siboan - Otong Deep Well Project**
- **Hydro Geological Study and Mapping**
- **City Flood Mapping**
- **Rain water recycling Project**
- **Spring water development and watershed Management Project**
- **Regular water quality monitoring**

Clean Air Project

- **Conversion of 2-stroke to 4-stroke tricycles**
- **Streetlights Retrofitting Project**

Coastal Resource Management Project

- **Coastal Erosion and Study Mapping (2004)**
- **KASAY Sanktwaryo**
- **Porro Sea Garden Project**
- **Porro Sea Urchin Project**
- **Lingsat Marine Protected Area**
- **Fisherman's Village Project**
- **Beach refoerestation Project**
- **Beach ECOWATCH Project**

Pollution Abatement, Management and Monitoring

- **Mega MMT Project**

Disaster Preparedness Related Project

- **Geohazard Study and Mapping (July 2006)**
- **Operation of City Weather Station**

CITY ECO-TOURISM PROGRAM

- The Botanical Garden (20 has)
- The Sanitary Landfill (controlled landfill)
- The Seven Historical Hills
- Ecosan Village
- Kasay Marine Century old Spanish Protected Area
- Pindangan Ruins
- Carille Watchtower
- The Bacsil Ridge
- Fishermens Village
- White coralline beaches
- 60 year old American Watchtower and Poro Wallace Station (Old American Air Station)
- Marine Dive sites (corals and sunken battleships)
- Surfing areas

THE VISION

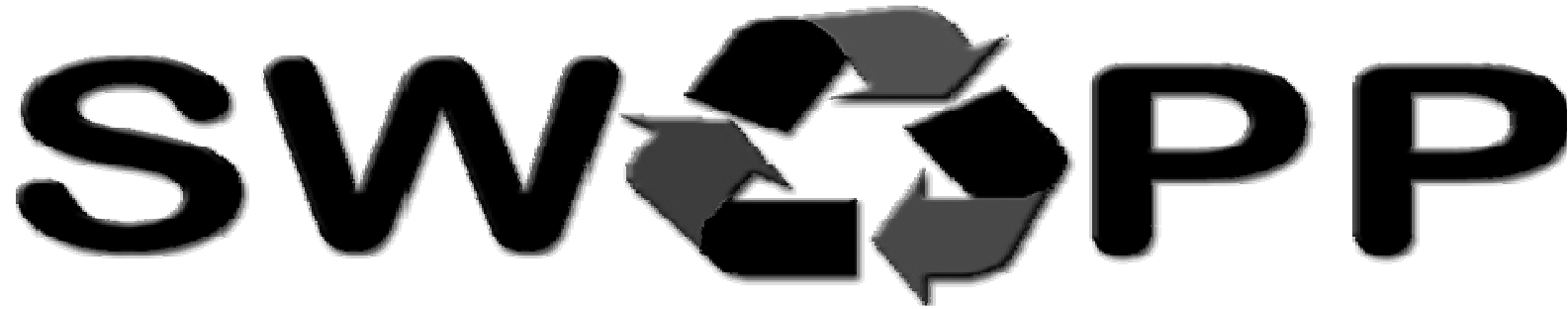
***“The Botanical Garden City
a healthy city and the springboard for regional progress”***

The City of San Fernando wants to be known as an environment-conscious place.



The Botanical Garden symbolizes the city's recognition that it wants to be known as a clean and green city.

***A CITY THAT EVERYBODY WANTS
TO LIVE AND WORK IN***



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*Botanical Garden
City of the North*

THANK YOU!

<http://www.sanfrancisco.org>