

Municipal Solid Waste Collection Needs in Port-au-Prince, Haiti

Position Paper



Typical view of the streets of Port au Prince

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August 2010



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1.0 INTRODUCTION

The purpose of this position paper is to document the equipment and service needs of the "Service Metropolitain de Collecte des Residus Solides" (SMCRS) - the state-appointed agency to collect and dispose of solid waste in the greater Port-au-Prince area which includes 8 cities and a population of 2.5 million. These equipment and services needs were identified during a meeting between SMCRS representatives and SWANA's Haiti Response Team held in Clearwater, FL on June 3-4, 2010.

The Solid Waste Association of North America (SWANA) has been the leading professional association in the solid waste field for over 40 years. SWANA serves over 7,500 members throughout North America, and thousands more with conferences, certifications, publications, and technical training courses. SWANA's mission is to advance the practice of economically and environmental sound municipal solid waste management in North America.

This report has been reviewed and approved by SWANA's International Board. It is hoped that after reviewing this report, governments, organizations and companies will be motivated to address a key sanitation and environmental issue faced by Haitians in Port-au-Prince - namely the need for an efficient and reliable solid waste collection system that effectively serves the needs of Port-au-Prince residents and businesses on an ongoing basis. Those organizations which desire to have a measurable and meaningful impact on sanitation and public health in Haiti should consider the funding and/or donation of the equipment and facilities identified in this report. By doing so, it is SWANA's professional opinion that the public health and environmental problems caused by the lack of sanitary solid waste management practices will be significantly reduced.

2.0 BACKGROUND

On February 24, 2010, SWANA was contacted by Captain Andy Coulter of the 82nd Airborne Division of the US Army and asked to provide advice on "cleaning up" the city of Port-au-Prince, Haiti following the earthquake on January 12th.

Up until the withdrawal of US troops from Haiti in March 2010, Capt. Coulter was working to provide assistance with solid waste management and vector control issues in Haiti. He contacted SWANA in an unofficial capacity in his request for assistance.

On March 4, 2010 SWANA received an official letter from the SMCRS inviting SWANA for a "prospecting visit in Haiti in order to discuss possibilities of assisting the people of Haiti by helping develop efficient waste collection routes and automation support."



A SWANA member - Claudia Moeller, P.E. of Golder Associates - was recently in Haiti working with a Swedish relief organization as a part of the U.N. relief efforts. Having lived for 6 years in Haiti, she is an excellent source of information on local conditions. She indicated that SWANA could provide meaningful assistance through its training programs and the technical expertise of its members and recommended that SWANA send a team to meet with various government agencies, including the SMCRS, involved in solid waste management to determine their needs and discuss partnership opportunities.

The request for assistance from the SMCRS focused on its municipal solid waste (MSW) collection services, as other organizations are providing assistance with the development and operation of its disposal facility - the "Decharge de Truietier" landfill. Disaster debris removal and management is being addressed through a separate agency.

3.0 THE SWANA HAITI RESPONSE TEAM

On March 3, 2010, SWANA issued an invitation to members of SWANA's Collection Technical Division to voluntarily participate in the SWANA Haiti Response Team. Based on the responses received, SWANA formed a "SWANA Haiti Response Team" consisting of five SWANA solid waste collection system managers and a SWANA staff person (See Table 1).

On March 15, 2010, a conference call was conducted with members of SWANA's International Board to discuss and confirm its support of the SWANA Haiti Response Team.

| Name | Title | Organization | Jurisdiction/Location |
|-------------------------|-------------------------------------|---|----------------------------|
| Victoria O. Garland | Key Business Executive | Solid Waste Services Department | City of Charlotte NC |
| William A. Del Vecchio | Director, Solid Waste and Recycling | Georgetown University | Washington, DC |
| John Pittman | Assistant Director - Solid Waste | Solid Waste/General Services Department | City of Clearwater, FL |
| Rusty Cole | Operations Assistant Manager | Pierce County Recycling, Composting and Disposal Waste Connections, LLC | Pierce County (Tacoma), WA |
| Wayman J. Pearson | President | WJ Pearson Inc. | Clearwater, FL |
| Jeremy K. O'Brien, P.E. | Director of Applied Research | SWANA | Silver Spring, MD |



4.0 SOLID WASTE COLLECTION IN PORT-AU-PRINCE¹

The solid waste management situation in the metropolitan area of Port au Prince is chronically poor. The regional authority mandated to manage the system, the SMCRS, is significantly under capacity and suffers from insufficient capital investment, ineffective maintenance of equipment, inadequate operating revenues, and inconsistent management.

Local municipal government efforts are inadequate to offset this shortcoming. The collection and disposal of solid waste lags far behind the production. The long-term negative consequences are that large quantities of solid waste is left to rot in the streets and serves as breeding ground for any number of harmful disease vectors, that rampant dumping in drainage canals occurs greatly increasing the risk of flood during the rainy season, that quantities of hazardous waste are left in the open, and that illegal dumping and burning is commonplace. After the political unrest of early 2004 the situation was greatly exacerbated as many public services effectively stopped functioning, including solid waste collection and disposal.²

The metropolitan region is estimated to produce approximately between 1,400-1,600 metric tons of solid waste every day, with 80% coming from households, 10% from markets, and 10% from industry. An estimated 75% of this waste is organic matter (food cast-offs).³



Figure 1. Popular Market – Carrefour (Downtown Port au Prince)

¹ CHF International. Haiti Emergency Solid Waste Collection, Landfill Rehabilitation and Jobs Creation Program (SWM). (Cooperative Agreement # 521-A-00-04-00028-00). Final Report (July 28 2004 - April 30, 2005). Silver Spring, MD: CHF International, August 15, 2005.

² Ibid.

³ Ibid.

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SMCRS estimates a waste generation rate of 0.7 kg of waste per person per day (1.5 pounds/person/day) for the metropolitan area, which has narrow streets that are often impassable by refuse collection vehicles. Trash is discarded everywhere resulting in the spread of disease-carrying vectors (including malaria-spreading mosquitoes) and other unsanitary conditions (odors, blight etc.). SMCRS estimates that - due to equipment shortages and other issues - it is only able to collect 20% of the waste generated.

Since the earthquake, SMCRS has been operating 24 hours per day, servicing 8 routes every 12 hours. Their current fleet includes 34 forty five cubic meter (60 CY) rear loading compactor trucks and 14 open bed trucks. They also have 307 four cubic meter (6 CY) and twenty cubic meter (30 CY) dumpsters available to them that have not yet been deployed for waste collection. Their equipment maintenance program is reportedly poor. SMCRS owns and operates a landfill about 5 kilometers north of the City.

Their primary need is for assistance in acquisition and mobilization of reliable solid waste collection equipment and the development of efficient collection routes that will result in the most effective use of staff and equipment resources. There is also a need for better coordination and deployment of services with respect to the two private waste collection firms in the area.



Figure 2. Drainage Canal – Downtown Port-au-Prince

5.0 CLEARWATER MEETING

On June 3-4, 2010 a meeting of the SWANA Haiti Response Team and the SMCRS representatives was held in the conference room of the City of Clearwater's Solid Waste/General Services Department.

The SMCRS representatives who attended the meeting included Messrs. Germain Paulemon and Stanley Delinois. Mr. Paulemon is the General Director of the SMCRS which has around 1,200 employees and an annual budget of about \$2.4 million. A civil engineer by training, Mr. Paulemon has been employed by the SMCRS for over 30 years. Mr. Delinois is a junior engineer who is employed by the Haiti Department of Planification and who is responsible for the development of the waste collection routing system. Mr. Patrick Charles is a Haitian living in Miami who works for a shipping company and who served as a interpreter during the meeting.

| Organization | Representative | Title/Role |
|-----------------------------------|------------------|------------------|
| SMCRS | Germain Paulemon | General Director |
| Haiti Department of Planification | Stanley Delinois | Engineer |
| -- | Patrick Charles | Interpreter |

Following introductions, Mr. Paulemon gave a PowerPoint presentation on the SMCRS and its solid waste collection services. The presentation, a copy of which is included in Appendix A, included the following points:

- The SMCRS is an autonomous department of the government of Haiti, organized under the Ministry of TPTC. Its current responsibilities are to collect, transport and treat urban solid waste. The cities in the Port-au-Prince metropolitan area are responsible for the brooming and pile-up of the wastes.
- The SMCRS currently has 75 collection vehicles and related trucks and 1,183 employees. The most common type of equipment (48 of the 75 vehicles) is a rear load packer truck equipped with a winch which is used to lift and empty dumpster containers into the rear of the truck.
- A number of the collection vehicles are not equipped with winches, requiring the emptying of the dumpsters by hand shoveling.

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- The SMCRS runs two shifts per day. Each collection crew consists of 2 drivers, 2 controllers, and 8 workers per truck. (See Figure 3).



Figure 3. SMCRS Collection Vehicle and Crew

- Due to the lack of regularity of MSW collection, it is common for residents and businesses to place their wastes in piles at about 20 unofficial "drop-off" locations throughout the city. The SMCRS's collection services are designed to service these 20 locations twice per day. Once the drop-off locations have been serviced, the collection trucks will then span out in an attempt to service the neighborhoods surrounding these locations. SMCRS estimates that 30-45% of the waste generated in the city is placed at these drop-off locations on a daily basis.
- Mr. Paulemon indicated that there are not enough containers at these locations to handle the waste that is dropped off with the result that overflow waste is simply placed in piles on the sidewalk or street near the container. If the piles are not serviced and begin to create odors, it is common for citizens to set the piles on fire.

- Since the January 2010 earthquake, the workload of the SMCRS has increased significantly due to the blockage of roads with building rubble and the addition of building rubble to the MSW piles.
- The SMCRS workers are viewed as having a lower class work status by the general citizenry.
- Maintenance of collection vehicles is a significant problem due to the difficulty in procuring parts and supplies. When a truck breaks down, it generally is out of service for two to three months. Typically, three quarters of the collection vehicles are out of service at any given time. Some of the collection vehicles are too large for many of the roads in Port-au-Prince.
- One of the presentation slides listed the equipment and related needs of the SMCRS (See Figure 4).

9. IMPROVMENTS NEEDED

- Since the earthquake, an estimated 1.3 million of peoples are homeless and they produce more garbage because of changes in consuming habits. In order to improve the services provided SMCRS needs some supports.
- Training in the following:
 - ✓ Planification and charting of better routes
 - ✓ Coordination of dispatching
 - ✓ Upgrade of mechanical staff
- Acquisition of equipments and managing tools
 - ✓ Winches
 - ✓ GPS
 - ✓ Tracking Devices
- General Drawbacks of SMCRS
 - ✓ Fuel not always available
 - ✓ Tires not always available
 - ✓ Maintenance elements not always available

Figure 4. Equipment and Other Needs of the SMCRS

Following Mr. Paulemon's presentation, the group discussed and analyzed the solid waste collection needs in Port-au-Prince and concluded that it would be beneficial to divide the needs into two major areas:

- **Provision of Sufficient Services to Collect Waste As Generated** - Even if its equipment is fully operational and sufficiently staffed, the SMCRS is only able to collect about 20% of the MSW that is generated in Port-au-Prince on a daily basis. As a result, it is continually playing catch-up and is not able to implement standardized and efficient waste collection routes and other procedures associated with the regular and systematic collection of wastes as they are generated. The group concluded that the primary service provided by the SMCRS should be to collect MSW as it is generated. As discussed below, to provide this service the SMCRS will need new types of collection equipment such as front-end loaders as well as new containers such as front-load dumpster containers and solar-powered compactor containers to service the refugee camps. The provision of regular collection services can be designed to service routes on a regular basis, meet industry productivity standards such as a required number of households (neighborhoods) served per day per collection crew.
- **Cleanup and Collection of Previously Generated Wastes** - In addition to the provision of services to collect as-generated waste, the SMCRS should develop a separate service that targets the collection and cleanup previously generated waste. This service should be designed as a dispatch service that is designed based on the size of the waste pile to be cleaned up etc. Importantly, the dispatch service crews should be used to service the 15-20 major waste drop-off piles that are currently used by the Port-au-Prince residents due to the lack of regularly scheduled collection services. As wastes begin to be collected on a regular basis, the use of these sites should diminish over time.

6.0 SCMRS EQUIPMENT AND FACILITY NEEDS

6.1 Introduction

The SWANA Team worked with the SMCRS to identify the immediate, short and long term equipment, facility and related needs of the SMCRS. These needs are summarized in Tables 3-5 and briefly described below.

6.2 Immediate Needs

The immediate needs of the SMCRS are presented in Table 3 and summarized below.



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- **Manager Training/Certification** - The managers and supervisors of the SMCRS should receive training in efficient MSW collection practices by attending SWANA's "Manager of MSW Collection Systems" course and becoming certified by taking and passing SWANA's MSW Collection Systems certification exam.
- **Large, Heavy Duty Neighborhood Sanitation Bags** - The SMCRS would like to place large, heavy duty Sanitation Bags in the 15-20 commonly-used drop off locations in hopes that residents will place their wastes in these bags. This approach would help reduced the need to shovel the drop-off waste into the rear load packer trucks using hand shovels as is currently done.
- **Loudspeaker Systems For Collection Vehicles** - Because collection crews are often not able to service neighborhoods on a regularly scheduled basis, the SMCRS has expressed a need for loudspeaker systems to be installed in the collection vehicles. This would enable the collection vehicle operators to announce their presence in a neighborhood and would encourage residents to then set out their wastes for collection.
- **GPS Systems For Collection Vehicles** - SMCRS managers indicated that the installation of GPS equipment in its collection vehicles would enable them to track the locations of the vehicles and ensure that they are making reasonable route progress and area not used to serve non-designated areas.
- **Spare Parts and Tires for Collection Vehicles** - Collection vehicles can be rendered non-functional due to the lack of spare tires and parts. The SMCRS needs to be able to stock these items and directly order them from reputable suppliers.
- **Pressure Washer System** - A truck pressure wash system is needed to reduce the staff time needed to wash trucks by hand as is currently done.
- **Track for Track Loader** - The SMCRS's track loader is currently non-functional due to the lack of a replacement track.
- **Vacuum and/or Sweeper Trucks** - The SMCRS needs a vacuum truck and/or mechanical sweeper to reduce the staff time now required to clean up waste pile sites after they are serviced. This work is now done by hand.
- **Public Education Program** - A public education program is needed to educate the residents of Port-au-Prince on the environmental and public health dangers associated with the street



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deposition and burning of refuse and human excrement and to encourage them to use and respect the collection containers placed in neighborhoods for refuse collection.

| TABLE 3 | | | |
|---|---|---|--|
| SMCRS - Immediate Needs | | | |
| Need | Impact | Ballpark Cost Estimate | |
| 1. Staff Training/Certification | Will improve management and planning of Solid Waste Services | \$10,000 | |
| 2. Large, Heavy Duty Neighborhood Sanitation Bags | Will improve neighborhood cleanliness and efficiency of collection services | \$25,000 | |
| 3. Loudspeaker Systems For Collection Vehicles | Will notify residents that collection truck is servicing their neighborhood | \$10,000 (\$200 per vehicle 50 vehicles) | |
| 4. GPS Systems for Collection Vehicles ⁴ | Will enable SMCRS managers to monitor progress and locations of collection vehicles | \$37,500 (\$500 per vehicle x 75 vehicles) | |
| 4. Spare Parts and Tires for Collection Vehicles | Will reduce downtime of collection vehicles. | \$75,000 (\$1,000 per vehicle x 75 vehicles) | |
| 5. Pressure Washer System For Collection Vehicles | Will reduce staff time required to wash vehicles by hand | \$50,000 | |
| 6. Track for Track Loader | Will allow track loader to become operational | \$10,000 | |
| 7. Mobile Maintenance Truck | Will reduce downtime of collection vehicles | \$30,000 | |
| 8. Sweeper or Vacuum Truck | Will reduce staff time at drop-off locations | \$150,000 | |
| 9. Public Education Program for Benefits of Sanitary Solid Waste Management | Will inform residents of the public health and environmental damage caused by improper solid waste practices. | \$50,000 | |
| Total | | \$372,500 | |

6.3 Short Term Needs

The group also identified and discussed the short term equipment needs of the SMCRS, which are listed in Table 4 and briefly described below.

- **Solar-powered compactors for high density areas** - The SMCRS crews spend a considerable amount of time hand shoveling refuse piles into rear load packer vehicles. In the U.S. there has been a growth in the implementation of solar-powered, self-contained

⁴ May not be feasible due to local data transmission issues.



refuse compactor containers. The SWANA Haiti Response Team feels that the strategic location of these compactors in high density areas, such as refugee camps, would greatly reduce the workload of the staff servicing these areas.

- **Strategically-located "bare bones" transfer stations** - Currently, the SMCRS crews spend a considerable amount of time off route hauling collected solid wastes to the landfill. The deployment of a small number of 'bare bones' transfer stations could greatly reduce the off-route time of these crews. These stations could be as simple as an open air earthen mound that enables the collection vehicle to dump its wastes into an open top transfer trailer.
- **Front-end loader collection vehicles** - The current method used by the SMCRS to empty dumpster containers is by rolling the dumpster to the back of the rear load collection vehicle, attaching the dumpster to the vehicle's winch and emptying the dumpster by operating the winch. This process requires 15-30 minutes per dumpster. Front-end load collection vehicles use front forks to lift the dumpster over the top of the truck into the hopper. This process reduces the dumpster servicing time to less than a minute.

| Need | Impact | Ballpark Cost Estimate |
|--|--|--|
| 1. Solar-Powered Compactors For High Density Trash Areas | Improved servicing of refugee camps and other high density areas | \$75,000 (\$15,000 x 5 compactors) |
| 2. Strategically Located 'Bare Bones' Transfer Stations | Reduce off-route collection time | \$300,000 (\$100,000 x 3 transfer stations) |
| 3. Front End Loader Compactor Trucks/Dumpster Containers For Commercial Collection | Significantly reduce servicing time of dumpsters | \$2,500,000 (\$250,000 per front end load collection vehicle x 10 vehicles) |

6.4 Long Term Needs

The final discussion session focused on the long term needs of the SMCRS. In this regard, the group agreed that the long term need of the SMCRS is for a waste recovery system consisting of a 1) an MSW composting system with a pre-processing materials recovery facility or 2) a waste-to-energy facility.



Of these options, the mixed waste composting facility is likely to be more cost-effective and practical, especially in light of the high food waste content (75%) of the MSW. This facility could be a low tech facility consisting of large cylindrical membrane composting bags placed out in the open on the landfill site.

A more expensive recovery option would be a thermal processing facility such as a mass-burn waste-to-energy facility.⁵ The advantage of this approach is that it could be used as a source of renewable energy to help meet the electricity and heat energy needs of the Port-au-Prince metropolitan area.

| Table 5 | | |
|--|------------------------------------|------------------------|
| SMCRS - Long Term Needs | | |
| Need | Impact | Ballpark Cost Estimate |
| 1. Mixed Waste Composting Facility Feasibility Study | Improved solid waste disposal | \$100,000 |
| 2. Waste-to-Energy Facility Feasibility Study | Production of electricity from MSW | \$100,000 |

7.0 CONCLUSIONS AND NEXT STEPS

In 2005, the U.S. Agency for International Development (USAID) funded a project called "The Haiti Emergency Solid Waste Collection, Landfill Rehabilitation and Jobs Creation Program". This program employed thousands of Haitians to clean up solid waste piles in Port-au-Prince over a nine-month period in 2004-2005. The result of this program was the cleanup of a number of the waste piles in Port-au-Prince. While this effort was significant and temporarily effective, it did not address the systemic needs of the Port-au-Prince solid waste collection system. As a result, the waste piles returned to the streets of Port-au-Prince despite the \$3 million investment by USAID in this program.

The immediate, short and long term needs documented in this paper will require a similar investment - on the order of \$3.3 million - but will result in a significant long term improvement to the solid waste management system in Port-au-Prince. It is SWANA's goal to assist the SMCRS by submitting this paper to manufacturing companies, funding agencies and other organizations that may be able to meet one or more of the equipment and other needs identified in this paper.

⁵ The group toured the Pinellas County waste-to-energy facility during its meeting in Clearwater.



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Additionally, SWANA is making a long-term commitment to assist the SCMRS in the implementation of an environmentally and economically sound solid waste management system in Port-au-Prince through the provision of training and technical assistance.

In closing, we want to extend our sincere thanks to Messrs. Paulemon, Delinois and Charles for making the effort to attend the meeting in Clearwater and meet with the SWANA Haiti Response Team. SWANA would also like to thank the City of Clearwater's Solid Waste/General Services Department, represented by Mr. Earl Gloster (Director) and Mr. John Pittman (Assistant Director) for hosting the meeting and for the hospitality extended to the group.



Appendix A

Presentation of Mr. Germain Paulemon to the SWANA Haiti Response Team



Brief Presentation of SMCRS

MEETING WITH SWANA
City Hall
City of Clearwater, Florida
June 3rd 2010

Summary

1. Historic of SMCRS
2. Overview
3. Organisational structure
4. Equipments
5. Daily work shifts
6. The landfill
7. Miscellaneous works
8. Budget
9. Improvements needed
10. Acknowledgments

1. Historic of SMCRS

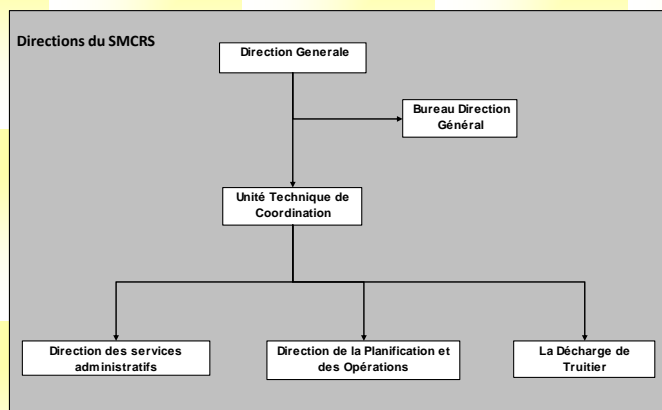
- Creation date: March 3rd 1981
- Initial Mandate
 - **Collect and treat urban waste**, such as household waste and collective waste (restaurants, military and police cantonments, schools and artisanal, commercial and industrial wastes)
 - **Clean streets, parks, as well as public market place and all kind of public spaces**
- SMCRS is an autonomous state structure actually incorporated to the Ministry of TPTC, incorporation has changed several times : MTPTC (1981), Mairie de PAP (1983), MTPTC (1989)
- 1989 : The initial responsibilities were scinded between the municipalities and SMCRS
 - SMCRS : **Collect, Transport and Treat** urban wastes
 - Cities : **Brooming and Pile-up**

2. Overview

- | | |
|--|---|
| <ul style="list-style-type: none"> • <u>Inventory (December 2006)</u> <ul style="list-style-type: none"> – Immobilisations : <ul style="list-style-type: none"> • Siège social (Ti place Cazeau), • Décharge de Truitier – Equipements : <ul style="list-style-type: none"> • 106 pieces • 10 in working condition – Human Resources : <ul style="list-style-type: none"> • 1600 employees (<i>90% of the budget</i>) • Employees without social coverage – Budget /monthly: <ul style="list-style-type: none"> • 2005/2006 : 11,5 millions HTG • 40 HTG = US\$ 1 | <ul style="list-style-type: none"> • <u>Inventory (April 2010)</u> <ul style="list-style-type: none"> – Immobilisations : <ul style="list-style-type: none"> • Siège social (Ti place Cazeau), • Décharge de Truitier – Equipements : <ul style="list-style-type: none"> • 75 pieces • All in working condition – Human Resources : <ul style="list-style-type: none"> • 1183 employees (<i>60% of the budget</i>) • All employees covered by health insurance – Budget /monthly: <ul style="list-style-type: none"> • 2008/2009 : 9,2 millions HTG • 2009/2010 : 14,590,878.42 HTG |
|--|---|

3. Organisation of SMCRS

- 3 Directions working under the leadership of a General Director and supervision of the technical coordination unit:



4. Equipments

SMCRS manages a fleet of 75 moving materials

- 12 Compressive trucks VW
- 23 Compressive trucks International
- 13 Compressive trucks MACK
- 10 Trucks Roll On/ Roll Off
- 8 Open Back Trucks Mack
- 6 Open Back Trucks Peterbilt
- 1 open Back Truck Isuzu
- 4 Loader (1 backhoe)
- 2 trash compactor
- 2 bulldozer D8
- 1 lift truck
- 1 flat bed

And also

- 360 4-cubic meter dumpster
- 100 4-cubic meter dumpster
- 30 35-cubic meter dumpster

4.1. New 2009 Mack compressive trucks – 12 units

Vehicles equipped with winches
Drawback
✓ Too large for some roads



4.2. Old 1977 Mack Compressive Truck – 1 unit

- Cost a lot to maintain

4.3 Compressive Truck International -23 units

- 15 units housed at the municipalities
- Drawback
- ✓ Not equipped with winches

4.4 Compressive VW Trucks – 12 units

- Drawback
- ✓ Not equipped with winches

5.- Daily Work shifts – Collection and Transport

- **Compressive trucks:**
 - 2 shifts/day : 2 drivers, 2 controllers, 8 workers /truck
 - 2 rotations/shift (It takes about one hour for a round trip to the landfill)Drawbacks :
 - ✓ Trash pile up in the streets
 - ✓ Workers have to empty the trash bins manually

- **Open back trucks :**
 - 2 fleet (each: 7 trucks + 1 loader)
 - 2 shifts : about 14 trips to the landfill per dayDrawbacks :
 - ✓ The loaders tires wear out rapidly and are not always available on local market
 - ✓ Daytime turnaround slow because of traffic
 - ✓ No transit storage facilities

6.- The landfill

- The landfill called « Décharge de Tritier » works 4 shifts (7j/7, 24h/24)
 - 1 director
 - 4 supervisors (1 per shift)
 - 8 registrars : (2 per shift)
 - Listing the trucks and volumes of waste
 - 44 controllers (team of 10+ 1 supervisor per shift)
 - Showing the trucks where to dump
 - 4 operators
 - Manning bulldozers and compactors
 - 1 Chief and a team of 8 sweepers
 - Cleaning the access roads

- Surface of site :
 - Total : 250 hectares
 - Used : 50 hectares

7.- Miscellaneous works

- Sweeping
 - 25 teams (1 chief and 10-14 workers)
 - organised in 2 shift :
 - Mostly in streets where the municipalities are deficient

- Sewage :
 - 1 team of 15 (1 supervisor, 14 workers)
 - Cleaning manually on daytime only where channels are overflowing

8. Budget

- Evaluated monthly need of SMCRS for 2009/2010

| TYPE | MONTANT |
|------------------------------|----------------------|
| RESSOURCES HUMAINES | 14,411,266.00 |
| MOBILIER, MATERIEL | 435,000.00 |
| Fonctionnement du bureau | 634,000.00 |
| Fonctionnement des Véhicules | 15,796,355.00 |
| Représentation/Publicité | 265,000.00 |
| Divers | 800,000.00 |
| TOTAL | 32,341,621.00 |

- 2009/2010 Allocation : 14,590,878.42 HTG.
- The fiscal year starts on october 1st to end on september 30th.

9. IMPROVEMENTS NEEDED

- Since the earthquake, an estimated 1.3 million of peoples are homeless and they produce more garbage because of changes in consuming habits. In order to improve the services provided SMCRS needs some supports.
- Training in the following:
 - ✓ Planification and charting of better routes
 - ✓ Coordination of dispatching
 - ✓ Upgrade of mechanical staff
- Acquisition of equipments and managing tools
 - ✓ Winches
 - ✓ GPS
 - ✓ Tracking Devices
- General Drawbacks of SMCRS
 - ✓ Fuel not always available
 - ✓ Tires not always available
 - ✓ Maintenance elements not always available

Acknowledgements

- SMCRS wants to take this opportunity to thank SWANA for the interest that it showed in helping the people of Haiti plagued with various calamities especially the devastating earthquake of January 12th at the beginning of the year;
- Special thanks to Mr Jeremy O'Brien that worked relentlessly to make this meeting possible;
- For the man who started it all, Captain Anthony Coulter of the U.S. Army SMCRS will be always greatfull.