# SUNSHINE CANYON LANDFILL SUPPLEMENTAL WASTE CHARACTERIZATION STUDY

# *FACTSHEET*

Q: What were the purposes of this supplemental waste characterization study?

A: The purposes of the supplemental study were four-fold, they were:

(1) To supplement the required biannual material type waste characterization studies to obtain information that can be used to develop measures to mitigate landfill odors, and to update landfill gas generation models;

(2) To provide critical information on chemical and physical properties of selected waste streams to enhance the design and efficiency of the overall landfill gas collection system;

(3) To provide information for improved waste diversion programs; and

(4) To provide information on the waste composition during a "wet season" when the odor complaint is high.

Q: How was the characterization study conducted?

A: The waste characterization study was conducted using samples collected from four major waste sources: (1) residential, (2) commercial/industrial, (3) roll-off/compact; and (4) self-haul. The selected waste samples were subject to material type sorting, sizing, chemical and physical properties analyses and testing for biochemical methane potential (BMP).

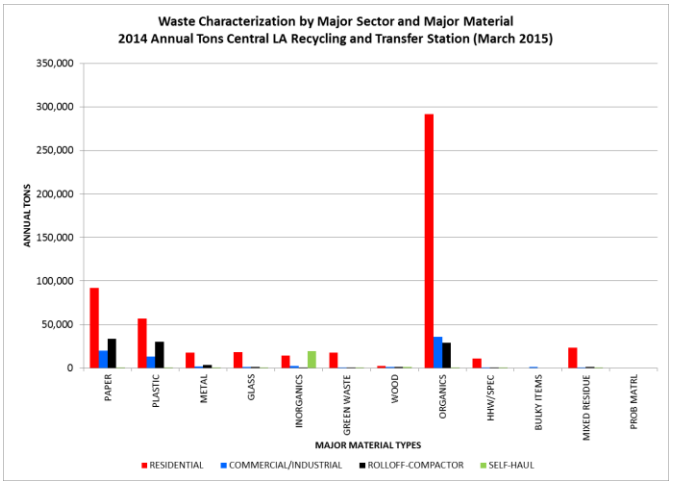
Q: What are the results?

A: Key findings are:

- Of all four waste sources sampled, 73%[1] (by weight % based on 2014 annual tonnage) is from residential, 14% is from roll-off/compactor, 10% is from commercial/industrial, and only 3% is from self-haul[2].
- Organics is the major material type, particularly for residential wastes, then followed by commercial/industrial wastes.
- Major waste types in roll-off/compactor wastes are paper and plastics, and the self-haul contains mostly inorganics (up to 90%).
- Material type size screening shows that 21% of paper is 4", 24% of plastic is 9", 86% of metal is 4", 63% of inorganics is 20", 38% of greenwaste is 2" or less, 38% of wood is 9", 34% of organics is 4", 91% of mixed waste is 2" or less, and 49% of household hazardous waste is 16".

[1] All weight percentage listed in the Factsheet is based on 2014 annual waste tonnage from Sunshine Canyon Landfill.

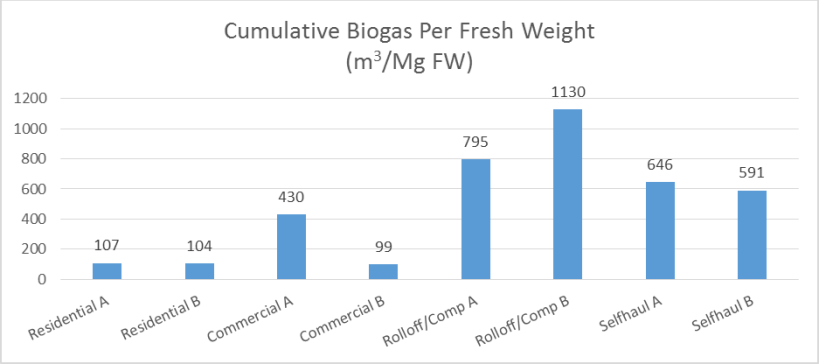
[2] This is a limited study conducted in February 2015. The wastes received, at the Central Los Angeles Transfer Station where the study was conducted, were from the City of Los Angeles only.




- Biochemical methane potential testing[3] results shows that cumulative biogas formation rates per fresh weight of waste range from 104 to 1,130 $m^3$/Mg fresh weight, for residential and roll-off/compact wastes, respectively. The range of methane content in the biogas is from 37% to 55% with an average of 47%.
- Proximate analysis results show that food wastes contain 74% weight percentage is moisture, following by miscellaneous organics (i.e., diapers, feminine products, kitty litter, etc.) with 67%, and greenwaste (yard waste) with 58%. Plastics, including high-density polyethylene bottles and containers, other bottles/containers, and remainder composite plastics, have >90% of volatile matter.
- Ultimate or elemental analysis results show that plastic materials have the highest carbon content (80% by dry weight) and hydrogen content (12%) with a heating value of approximately 19,000 BTU/lb. Food and organic wastes have highest nitrogen content (2 to 4%), and rubber has highest sulfur content of 0.8%.

Q: What do these results mean?

A: The results indicate that:




- Waste source, material type and sizing analyses provide key information for engineers to design waste diversion and processing.
- Organic fraction has the highest moisture content, and coupled with high volatile matter can generate higher biogas under anaerobic condition such as in a landfill environment. If the waste contains sulfur and/or nitrogen compounds, it can generate odorous gas under anaerobic conditions.
- The existing landfill gas generation model uses a BMP of 100 $m^3$/Mg. The BMP rate changes overtime as a result of recent regulatory requirements, recycling efforts, etc. Using the new BMPs will assist engineers to design an effective and efficient collection system to mitigate emissions of landfill gases and enhance energy recovery.

[3] Biochemical methane potential test is conducted in a laboratory environment for 21 days, daily gas production amount is recorded and cumulative biogas production rate is calculated.