













































Commencing January 1, 2016 and thereafter on each January 1, this Agreement is in effect, including any extension years, the rates stated above shall be increased by 90% of the change in the value of the All Urban Consumers Index (CPI-U), All Items, for the San Francisco-Oakland-San Jose, CA, Base Period 1982 – 1984 = 100, not seasonally adjusted, compiled and published by the U. S. Department of Labor, Bureau of Labor Statistics (or its successor) for the previous October and its value twelve months before.

**c) Contamination Level**

Contractor shall be entitled to reject any load with greater than 20% Contamination by weight or any load which appears to contain any quantity of Hazardous Substances. Any load containing in excess of 20% Contamination shall be classified as Solid Waste and loaded onto the Transfer Company's vehicles for backhaul to the Shoreway Facility at no cost to Contractor.

**d) Negotiated Disposal for Excessive Contaminated Loads**

For loads that exceed the 20% Contamination threshold, but which are salvageable by sorting Contamination out of the load, the SBWMA can choose to have the Contractor sort contamination from the load so that it falls below the 20% threshold. For loads that are sorted to remove excessive Contamination, the SBWMA will reimburse Contractor on a time and materials basis for the Direct Cost of handling of the excessive Contamination (e.g., sorting, transportation and disposal).

**EXHIBIT D**  
**MONTHLY REPORTING**

Contractor will provide the SBWMA a monthly report that summarizes monthly the inbound/outbound materials, a materials mass-balance by supplier, and material market outlets as well as the detail scale reports and other documentation that supports the data in the summary report. The Contractor shall provide and the SBWMA shall approve the report structure.

## **EXHIBIT E**

### **CONTAMINATION MEASUREMENT METHODOLOGY**

#### **a) Excess Contamination in Organic Materials**

The Contractor is expected to successfully process Organic Materials delivered from the Shoreway Facility.

If upon visual inspection of an inbound load, the Contractor believes it exceeds the Contamination threshold of 20% by weight, the Contractor has the right to isolate the load and immediately contact a designated representative from both the Transfer Company and the SBWMA prior to conducting any Contamination sampling. Representatives of the Transfer Company and the SBWMA will be provided the opportunity to inspect the isolated load within six (6) business hours of being notified by the Contractor. If the Collection Contractor or the SBWMA is interested in observing the sampling and testing of the load, the Contractor will schedule time for sampling that is within eight (8) business hours of having provided notification.

If the measured Contamination level for the load, as determined by the methodology, does not exceed 20% by weight, then Contractor (1) shall Process the load as required by the Agreement, and (2) shall be responsible for the cost of the Contamination measurement procedure.

If the measured Contamination level for the load, as determined by the methodology, exceeds 20% by weight, then (1) Contractor shall load the materials onto the Transfer Company's vehicle for back haul to the Shoreway Facility at no cost to Contractor, and (2) SBWMA shall reimburse Contractor for the Direct Cost of the Contamination measurement procedure.

If SBWMA requires Contractor to conduct Contamination sampling on a given load, SBWMA shall reimburse Contractor for the Direct Cost of the Contamination measurement procedure, regardless of the measured Contamination level for the load.

#### **b) Contamination Measurement Methodology**

If the Contractor identifies excessive Contamination in a load, the following methodology for quantifying the Contamination level will be followed:

1. **Objective**—describes the purpose of the methodology.
2. **Sampling rationale**—defines which loads will be sampled.
3. **Sampling allocation**—describes the number of samples required to provide a sufficient level of accuracy in findings.
4. **Test procedures**—describes sampling and sorting activities for each load.
5. **Sorting categories**—describes the sorting categories.
6. **Calculations**

Appendices 1 through 3 consist of:

1. *methodology checklist*
2. *sample data collection forms*
3. *equipment list*

#### **Objectives**

This methodology is designed to estimate the Contamination level (as a percentage by weight of the entire load) in an individual load from one of the four (4) inbound Material Types.

- Segregated Plant Materials

- Segregated Wood Waste
- Segregated Food Waste
- Commingled Plant Materials and Food Waste)

The methodology described is intended to produce consistent and reliable estimates of the Contamination level of individual loads. In addition, the methodology is designed to require the minimum necessary organizational time and financial investment.

### **Sampling rationale**

Loads may be selected for sampling when observation of the load by SBWMA or Contractor indicates that it may exceed the allowed Contamination level. A sampling process will be used to determine the measured Contamination level in individual loads.

### **Sampling allocation**

Approximately five (5) samples, each weighing approximately one hundred and fifty (150) pounds, are required from an individual load in order to calculate the measured Contamination level with a sufficient level of accuracy. It is expected that a two (2) person crew can obtain, sort, and weigh five (5) samples in a five (5) to seven (7) hours period.

### **Test procedures**

Test procedures are broken down in to the following steps, which shall be used by SBWMA, or a third party designated by the SBWMA.

- Safety training and staff coordination
- Sampling and sorting area designation
- Sample selection
- Sample sorting
- Sample disposal
- Data management

These steps are described in more detail following the definitions of roles. Each step is the responsibility of a specific person or group of people as follows:

- **sampling crew manager**—responsible for selecting samples, working with Operator and the *sampling crew*, quality control, and compliance with Facility regulations.
- **sampling crew**—responsible for sorting samples.
- **facility manager**—responsible for coordinating with the *sampling crew manager*.
- **tipping floor staff**—responsible for identifying loads potentially Contaminated beyond the acceptable threshold, creating a designated sampling and sorting area, and ensuring segregation of selected loads in that area.
- **loader operator(s)**—responsible for segregating the selected the load from other loads in the designated sampling and sorting area.

### **Safety training and staff coordination**

When the *sampling crew manager* and the *sampling crew* arrive at the Composting Facility they will participate in any required safety training and put on all required personal protective equipment (see the *equipment list* shown in Appendix 3). The *sampling crew manager* will also walk through the process of extracting samples from the designated load with both the *loader operator(s)* and the *tipping floor staff*.

### **Sampling and sorting area designation**

With the input of the *tipping floor staff* and the *loader operator(s)*, the *sampling crew manager* and *sampling crew* will set up in the designated sampling and sorting area near the tipping floor. The sorting area should be in a location near the load to be sampled and from which the loader can safely remove samples after sorting.

### **Sample selection**

Five (5) cells will be randomly selected for sampling from each load using a random number generator.



The *sampling crew manager* will assist the *loader operator* in locating the appropriate cell for each sample using the sample cell map in Figure 1 below.

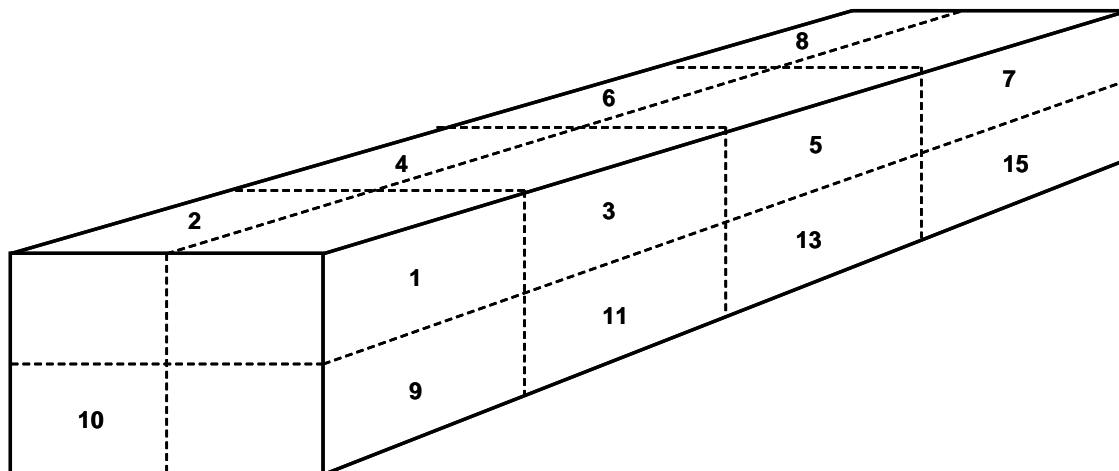
After the loader has extracted the material in the selected cell, the *sampling crew manager* will guide the loader to a designated tarp. Using visual cues the *sampling crew manager* will ensure the *loader operator(s)* deposits the proper quantity of material on the tarp. A shovel may be used to add material from the bottom of the cell to ensure the sample includes some heavy and small material that the loader bucket cannot collect.

Pulling the tarp is a basic test used to estimate sample weight.<sup>1</sup> If it is determined that a sample is too heavy it may be lightened by removing vertical slices from the sample. If it is determined that a sample is too light it may be increased by removing or adding more material. It is important to add or remove all material in the slice from the top to bottom, to ensure that both small, heavy, and loose materials and large, light, and bagged materials are added or removed.

Samples can be queued and stored on tarps until sorted but samples must be prevented from mixing with each other and with other material on the tipping floor. The *sampling crew manager* will place a unique sample placard on each sample for a photograph and, if the sample is not immediately sorted, for later identification. The placard is marked with a unique sample identification number and additional information (such as the date) used to identify loads in photographs and correlate load net weights with sample details. Each placard will be coded according to its corresponding sampling population (e.g., 'SPM-1' indicates the first load of segregated Plant Material). Each load will be photographed individually with the sample placard visible and legible.

**Figure 1: Sixteen (16) cell grid**

(Cells 12, 14 and 16 are below cells 4, 6 and 8, respectively)



**Sample sorting**

The sample identification number, as designated by the placard, will be recorded on the tally form (see Appendix 2 for an example of this form.) The sample will be moved into the designated sorting area. Next, the *sampling crew* will sort the Contamination materials, as defined in Appendix 1, out of the load and into sort containers. The *sampling crew* will then weigh the Contamination materials while the *sampling crew manager* records the weights on the tally form. The remainder of the load—all acceptable items—will be put

into containers, weighed, and recorded on the tally form. The *sampling crew manager* is responsible for monitoring the homogeneity of material in each container and ensuring the accuracy of the sorting process. At the end of each sampling day the *sampling crew* will comply with any *tipping floor staff* directions regarding cleaning the designated sampling and sorting area and storing sampling and sorting supplies.

### **Sample disposal**

After the weight of all material in each sample is recorded on the tally sheet, the *sampling crew* will move the sorted material to a location where it is safe and convenient for the loader to remove.

### **Data management**

At the end of each sampling day, the *sampling crew manager* will review all forms for accuracy and completeness. Any issues shall be resolved immediately while the day's work is still fresh in the mind. To ensure the tally forms are not lost before inputting the data into an electronic form, copies shall be made of all completed forms and copies will be kept in a place separate from the originals. One copy of the forms will be mailed or hand delivered to the person inputting the data into an electronic form.

The appendices cover calculations, data collection forms, and an equipment list for this study.

### **Sorting categories**

All loads identified for sorting shall be sorted and weighed into the following two (2) categories:

- 1) Contamination
- 2) Acceptable materials (i.e., segregated Plant Materials, segregated Wood Waste, segregated Food Waste or commingled Plant Materials and Food Waste)

### **Calculations**

Estimates of Contamination will be calculated using a method that gives equal weighting or "importance" to each sample within a given load.

In the descriptions of calculation methods, the following variables will be used:

- $i$  denotes an individual sample.
- $j$  denotes the Material Type.
- $c_j$  is the weight of the Material Type  $j$  in a sample.
- $w$  is the weight of an entire sample.
- $r_j$  is the composition estimate for material  $j$  ( $r$  stands for *ratio*).
- $a$  denotes a region of the state ( $a$  stands for *area*).
- $s$  denotes a particular sector or subsector of the waste stream.
- $n$  denotes the number of samples in the particular group that is being analyzed at that step.

### **Estimating the Composition**

The following method will be used to estimate the composition of waste belonging to the target materials.

For a given load, the composition estimate denoted by  $r_j$  represents the ratio of the component's weight to the total weight of all the samples in the load. This estimate will be derived by summing each component's weight across all of the selected samples belonging to a given load and dividing by the sum of the total weight of waste for all of the samples in that load, as shown in the following equation:

$$r_j = \frac{\sum_i c_{ij}}{\sum_i w_i} \quad (1)$$

where:

- $c$  = weight of particular component
- $w$  = sum of all component weights
- for  $i = 1$  to  $n$ , where  $n$  = number of selected samples
- for  $j = 1$  to  $m$ , where  $m$  = number of components

For example, the following simplified scenario involves three samples. For the purposes of this example, only the weights of the component *carpet* are shown.

	Sample 1	Sample 2	Sample 3
Weight ( $c$ ) of carpet	5	3	4
Total Sample Weight ( $w$ )	80	70	90

$$r_{\text{Carpet}} = \frac{5 + 3 + 4}{80 + 70 + 90} = 0.05$$

To find the composition estimate for the component *carpet*, the weights for that material are added for all selected samples and divided by the total sample weights of those samples. The resulting composition is 0.05 or 5 percent (5%). In other words, 5 percent (5%) of the sampled material, by weight, is *carpet*. This finding is then projected onto the stratum being examined in this step of the analysis.

The confidence interval for this estimate will be derived in two (2) steps. First, the variance around the estimate will be calculated, accounting for the fact that the ratio included two (2) random variables (the component and total sample weights). The variance of the ratio estimator equation follows:

$$\text{Var}(r_j) \approx \left(\frac{1}{n}\right) \left(\frac{1}{\bar{w}^2}\right) \left(\frac{\sum_i (c_{ij} - r_j w_i)^2}{n-1}\right) \quad (2)$$

where:

$$\bar{w} = \frac{\sum_i w_i}{n} \quad (3)$$

(For more information regarding Equation 2, please refer to *Sampling Techniques, 3rd Edition* by William G. Cochran [John Wiley & Sons, Inc., 1977].)

Second, precision levels at the 90 percent (90%) confidence level will be calculated for a component's mean as follows:

$$r_j \pm (z\sqrt{\text{Var}(r_j)}) \quad (4)$$

where z = the value of the z-statistic (1.645) corresponding to a 90 percent (90%) confidence level.

## Sampling Methodology Appendix E-1

### Methodology Checklist

#### a) Roles and responsibilities

- **Sampling crew manager**—responsible for selecting samples, working with Facility staff and the sampling crew, quality control, and compliance with Facility regulations.
- **Sampling crew**—responsible for sorting samples.
- **Facility manager**—responsible for coordinating with the sampling crew manager, SBWMA, and drivers.
- **Tipping floor staff**—responsible for identifying loads potentially Contaminated beyond the acceptable threshold, creating a designated sampling and sorting area, and ensuring segregation of selected loads in that area.
- **Loader operator(s)**—responsible for segregating the selected load from other loads in the designated sampling and sorting area.

#### b) Advanced preparation

##### **Project manager:**

- Contact *facility manager*  
Ask *facility manager* to update the following employees with the sampling plan:  
    *Loader operator(s)*  
    *Tipping floor staff*
- Request safety expectations
- Schedule safety training
- Ask if there are any circumstances that may affect the study (i.e., weather, animals, site construction, etc.)
- Obtain safety gear (Appendix 3)  
    Check safety gear
- Obtain sorting equipment (Appendix 3)  
    Check sorting equipment
- Print tally sheets (Appendix 2)  
    Print on “**Rite in the Rain**” all-weather paper

##### **Sampling crew and sampling crew manager**

- Review material list
- Review data collection forms
- Review unique site requirements

#### c) Arrival at Facility

##### **Sampling crew:**

- Arrive at Facility ahead of schedule
- Participate in any required safety training
- Don safety gear

##### **Sampling crew manager**

- Arrive at Facility ahead of schedule
- Reviews logistics and expectations with MRF manager
- Participate in any required safety training
- Don safety gear

**d) Tipping floor coordination****Sampling crew manager:**

- Designate a designated sampling/sorting area on each tipping floor (2) with input from tipping floor staff and loader operator(s), meeting the following criteria:
  - *Loader operator(s)* can visually communicate with sampling crew
  - *Loader operator(s)* can safely remove sorted loads
  - Approximately twenty (20) feet by twenty (20) feet
- Explain and walkthrough the sampling process with both the *tipping floor staff* and the *loader operator(s)*
  - Explain that samples must be dumped in a clean area, separate from other loads (called a designated dumping area)
  - Explain that the *sampling crew manager* is responsible for identifying the portion of the load that the *loader operator(s)* will sample
  - Explain the appropriate samples size (150 pounds)
  - Explain that the *sampling crew manager* will be responsible for guiding the *loader operator(s)* to the appropriate tarpaulin

**Sampling crew:**

- Set up designated sampling sorting area
  - Sorting table
  - Baskets
  - Digital scale(s)

**e) Sample collection****Tipping floor staff:****Sampling crew manager:**

- Direct *loader operator(s)* to pre-selected sampling cell
- Direct *loader operator(s)* to designated tarpaulin
- Signal *loader operator(s)* with tipping instructions
- Pull tarp to test for appropriate sample weight
- Place placard in the load
- Photograph load (Placard should be visible and legible)
- Wrap and segregate load until ready to sort

**Loader operator(s):**

- Pinch/scoop sample, as directed by the *sampling crew manager*
- Tip sample on designated tarpaulin, as directed by the *sampling crew manager*

**Sampling crew:**

- May assist *sampling crew manager* at any point

**f) Sample sorting****Sampling crew:**

- Move the sample into the designated sampling/sorting area
- Sort the sample
  - Sort Contamination materials into designated baskets
- Assist the *sampling crew manager* with weighing the baskets
- Assist the *sampling crew manager* with weighing the remainder material

**Sampling crew manager:**

- Record the sample ID onto the tally sheet
- Assist the *sampling crew* in moving the sample into the designated sampling/sorting area
- Sort the sample

- Sort all Contamination material into designated baskets
- Weigh baskets containing Contamination materials, and record weights on the tally sheet
- Ensure homogeneity of materials
- Weigh remainder material and record weights on the tally sheet
- Ensure all Contamination materials are removed

**g) Sample disposal**

***Sampling crew manager and sampling crew:***

- Dispose of all materials in a designated disposal area

***Loader operator(s):***

- Remove disposed materials when it is safe and convenient

**h) Data management**

***Sampling crew manager:***

- Review all forms for accuracy and completeness  
Tally sheet(s)

***Project manager:***

- Check all forms for accuracy and completeness  
Tally sheet(s)
- Copy all data forms  
Store copies separate from the originals
- Download pictures from camera
- Provide copies of data for electronic input
- Ensure data entry is checked for accuracy

**Sampling Methodology  
Appendix E-2**

**Data Collection Forms**

Appendix consists of copies of each of the following two (2) data collection forms:  
sampling placard  
tally sheet

**Figure 2: Example sampling placard**

Date: \_\_\_\_\_


Jurisdiction: \_\_\_\_\_

**SPM – 1**

**Cell 13**



Figure 3: Example Tally sheet

South Bayside Waste Management Authority: Contamination Sampling 

<b>CONTAMINANTS</b>	Container 1					DATE:		SAMPLE ID:	
	Container 2								
	Container 3					SAMPLING POPULATION:		SAMPLE WEIGHT:	
	Container 4								
	Container 5					TIME:		TRUCK NO.:	
	Container 6								
	Container 7					LOAD NO.:		CELL NO.:	
	Container 8								
	Container 9								
	Container 10								
<b>ACCEPTABLE</b>	Container 1					NOTES:			
	Container 2								
	Container 3								
	Container 4								
	Container 5								
	Container 6								
	Container 7								
	Container 8								
	Container 9								
	Container 10								

## Sampling Methodology Appendix E-3

### Sampling Equipment List

Appendix 3 provides a list of equipment necessary for all sampling and sorting activities. Extra safety equipment should be available to ensure the safety of observers or others at the sorting site.

#### **Sorting equipment:**

- Approximately twenty (20) identical sorting containers (e.g. laundry baskets or five (5) gallon buckets)
- square point shovels
- rakes
- push brooms
- digital scale, battery powered (weigh up to two hundred (200) pounds, accurate to one-tenth (1/10) of a pound)
- fifteen (15) to twenty (20) ten (10) foot by twelve (12) foot or similar size tarps
- clipboards
- data collection forms printed on Rite in the Rain paper
- permanent markers
- mechanical pencils
- tape measures
- utility knives, scissors
- duct tape
- ten (10) to fifteen (15) Carts
- ten (10) to fifteen (15) plastic receptacles
- four (4) metal eight (8) foot by twelve (12) foot tables
- one (1) metal work desk with drawer
- erasable placards and markers
- digital camera with extra flash card
- moisture probe
- six (6) special pallets with solid tops
- three (3) six cubic yard Bins
- three (3) three cubic yard Bins

#### **Safety equipment:**

- dust masks (N-95 or better)
- safety glasses
- hearing protection
- steel-toed work boots
- puncture resistant gloves
- glove liners (latex or nitrile)
- leather work gloves
- reflective safety vests (Brite Lime)
- hard hats
- safety/medical kit
- fire extinguisher
- disinfecting soap, paper towels, antiseptic towels
- water
- rubber aprons or Tyvek protective garments

**EXHIBIT F**  
**COMPOST QUALITY SPECIFICATION**

**U.S. Composting Council Seal of Testing Assurance  
Landscape Architectural Specification for Compost Use  
Specification for Turf Establishment**