

# **PRELIMINARY WASTE MANAGEMENT PLAN**

**Vallco** Town Center, Cupertino, California

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## 1.1 INTRODUCTION

Vallco is a redevelopment project that will completely re-develop the Vallco Mall. The project consists of a mixed-use retail, office and residential facility that consists of 11 "blocks" / buildings which are interconnected through pedestrian walk-ways and includes a rooftop park.

The following report provides a preliminary Waste Management Plan for servicing this 50-acre site based on a preliminary estimate of waste generation, a conceptual program for waste handling systems, and equipment and space program for the new Vallco Town Center in Cupertino, Ca.

## 1.2 INTENT OF THIS DOCUMENT

This Preliminary Waste Management Plan document is intended to provide the City of Cupertino Planning, Public Works, and Environmental Programs with an understanding of the preliminary loading, estimated size allocations, and different service strategies intended for the waste management of the Vallco Town Center site.

The applicant met on July 31, 2018 with Public Works, Environmental Programs, and Recology to review these materials to supplement the SB 35 Planning Application. A finalized Waste Management Plan indicating actual sizes, generation rates, equipment, and final systems will be submitted for review at the time of building permits.

The preliminary and final solid waste and recycling planning shall follow all applicable California State and local Cupertino Municipal Codes and goals for recycling, including state Assembly Bills AB341, AB939 and AB1826, and City of Cupertino Municipal Codes 6.24 and 9.16.

## 1.3 EXECUTIVE SUMMARY

Given the nature of the Project site, the proposed uses, and the square footage of Project programs outlined in the SB 35 Planning Application drawings, wastes will be generated from residences, commercial retail tenants, offices, facility maintenance, plazas / garden / park area, parking, and general street / walk-ways.

These wastes will be collected and transported vertically in building cores through a combination of trash chutes and / or service elevators to storage rooms in the basement based on the type of waste collected. From these locations, they will be collected by the operations personnel and transported horizontally to one of two Central Waste Terminals (CWT).

It is from these locations that the City's contracted third-party hauler as well as additional private haulers will remove the waste and transport it to the appropriate off-site facility.

## 1.4 EXPECTED WASTE STREAMS

The principle waste streams which volume is significant enough to justify larger compactor-container equipment include the following:

1. General Trash
2. Organic Wastes
3. Commingled Recyclables (single-stream plastics, glass, metals/cans, clean paper)
4. Cardboard

In addition, specialty waste streams that will be staged for pick-up in carts, dumpster bins, secured cage/room, hazardous or flammable cabinets, etc. These include:

1. E-Waste – print cartridges, computers, electronic cords, phones, etc.
2. Donatable Materials – clothing, household items, furniture, non-perishable food, etc.
3. Recyclable Hazardous Waste - batteries (particularly lithium based which are increasingly mandated for separation from landfill), light bulbs, cooking oil, etc.
4. Non-Recyclable Hazardous Waste – paints, aerosols cans, chemicals, hazardous oils, bio-medical / sharps (needles) waste, etc.

**1.5 PRELIMINARY WASTE MANAGEMENT STRATEGY**

**1.4.1 Overview – Central Waste Terminals (CWT)**

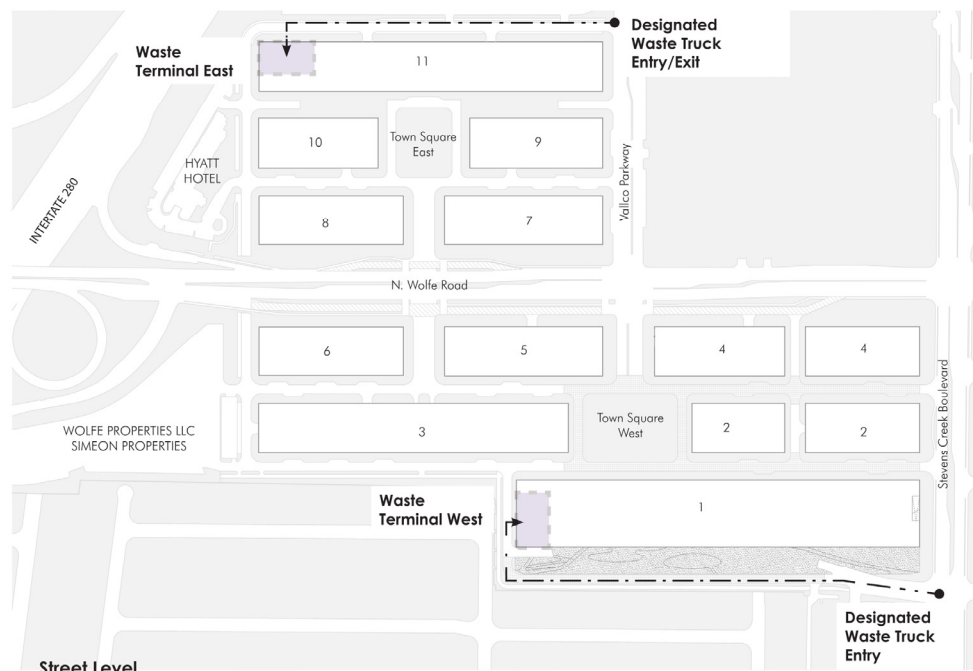
The overall principle strategy is to efficiently collect waste streams from disparate locations across the project site vertically into easily accessible centralized locations per block in back-of house basement storage rooms and then horizontally transport the materials to a small number of centralized pick-up locations for waste haulers.

There are multiple reasons for this, including reducing hauler costs, efficiencies generated by utilizing larger collection / staging equipment and areas, establishing central soiled dock locations resulting in better hygienic control (including centralized trash can / cart washing), reducing truck transport to / from and on-site, etc.

Two (2) centralized locations have been identified for establishing “Central Waste Terminals” (CWT), one at the East-side of Wolfe Road that handles Blocks 7 – 11, and one on the West-side of Wolfe Road that handles Blocks 1 – 6.

*Diagram 1.4.1.1 – Centralized Waste Terminals*

**Key**  

**Recology Waste Truck**  
35'L x 8'W x 10'H

Each block will use a combination of chutes and service elevators to vertically transport waste materials to the basement level where they will be aggregated in carts designated by waste type.

Each program (residential, office, and retail) will be separated in the below-grade staging areas within the building core areas and located adjacent to loading zones.

Retail and roof-top / public areas will be transported by hand down service elevators and will share centralized compactor-containers and staging areas.

Diagram 1.4.1.2 – Central Trash and Loading Rooms in Basement Level 1

- Key**
-  Waste Terminal
  -  Trash Collection Rooms
  -  Loading Areas
  -  Utility Truck Route



Battery Powered Tug



Utility Truck  
12'L x 6'W x 7'H



Once the waste has been transported to the central waste terminals, it will be compacted and prepared for off-haul by either the City of Cupertino's third-party hauler, Recology, or in the case of some of the specialty waste, private haulers.

### 1.4.2 Residential Waste Strategy

Residences will utilize a system of vertical chutes in trash rooms located on each floor that are connected to bin / cart receiving at the basement level, or connected to a Pneumatic Waste System (PWS) for the principle waste streams of (1) General Trash, (2) Commingled Recyclables (plastics, cans, mixed paper), and (3) Organic Wastes.

The PWS is an automated and sealed system with intake doors to compactor containers at each Central Waste Terminal. At the bottom of each inlet pipe are valve rooms where wastes are temporarily held – the system is not under continuous pressure.

Once substantial waste has been collected in the valve chamber, or on a scheduled run, the waste bags are pneumatically sent direct to the respective compactor container for each waste type.

Diagram 1.4.2.1 – Residential Section of Chutes and Service Elevators

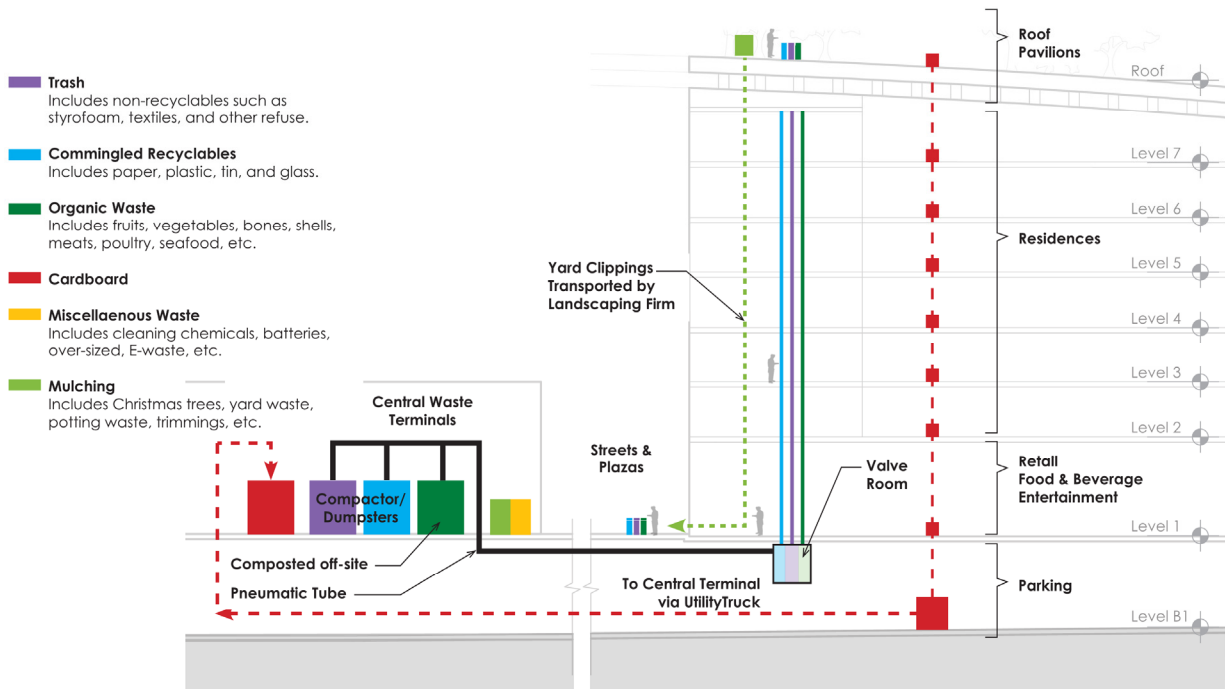


Diagram 1.4.2.2 – Example of Pneumatic Waste System Valve Room

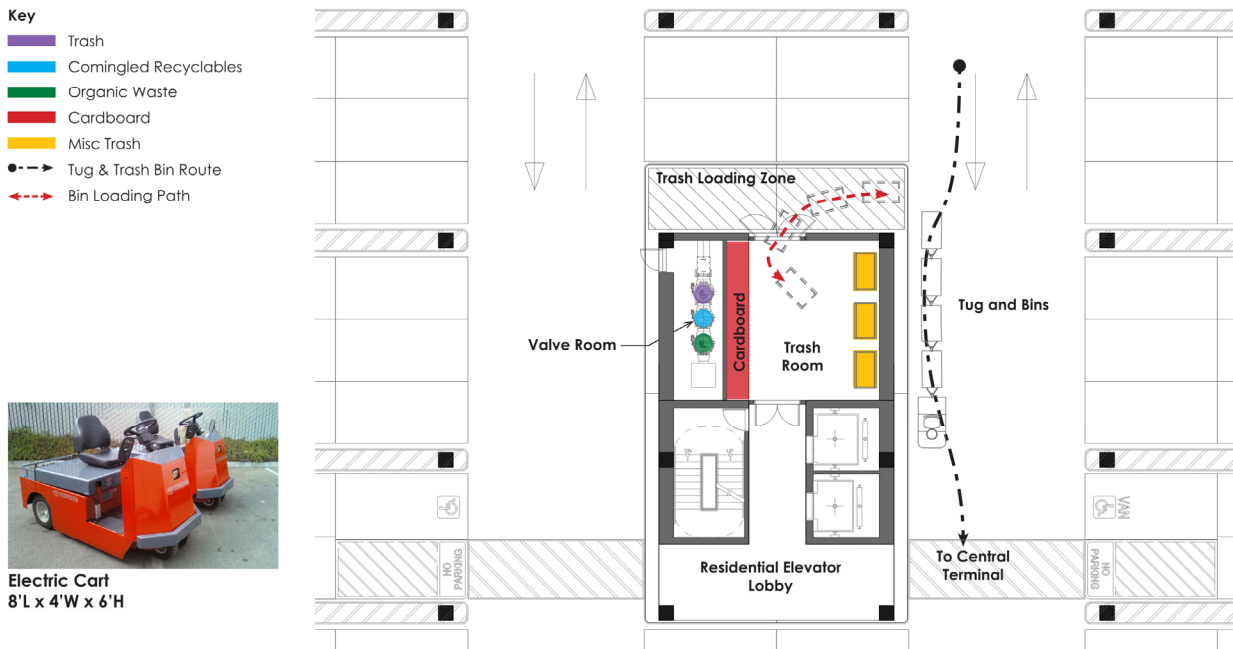


During rare times when the PWS is off-line for maintenance, the waste streams will be handled manually through the trash staging rooms and then transported manually to the CWT the same as retail, park, and office wastes.

There will be additional specialty wastes, including glass, cardboard, non-hazardous recyclables, and hazardous wastes, are collected in smaller bins in the PWS intake rooms on each floor and taken manually to collection rooms at the basement level by environmental / janitorial services.

Finally, there will be specific trash rooms on basement level accessible specifically by residents for bulk and specialty wastes. The specialty wastes are put into towable collection carts for semi-automated transport by tug to staging area under each CWT, and then manually taken to staging rooms/areas on both the Basement Level and First Floor soiled dock.

Diagram 1.4.2.3 – Residential Plan at Basement Staging Areas



### 1.4.3 Retail Waste Strategy

Retail wastes will be collected at point of generation by individual tenants and brought to basement level trash rooms for staging. A Tug system will take towable carts from the trash rooms to staging area under each central waste terminal, and then manually taken to staging rooms / areas for specialty wastes or direct to compactor-containers for the principle waste streams removal.

Principle waste types, including (1) General Trash, (2) Commingled Recyclables, (3) Organics, and (4) Cardboard will be taken to compactor containers at each respective CWT.

Diagram 1.4.3.1 – Retail Plan at Basement Staging Areas





### 1.4.4 Offices Waste Strategy

Office wastes will be collected at point of generation by individual tenants / janitorial staff and brought to Basement Level Trash Rooms via service elevators for staging.

Diagram 1.4.4.1 – Office Section of Chutes and Service Elevators

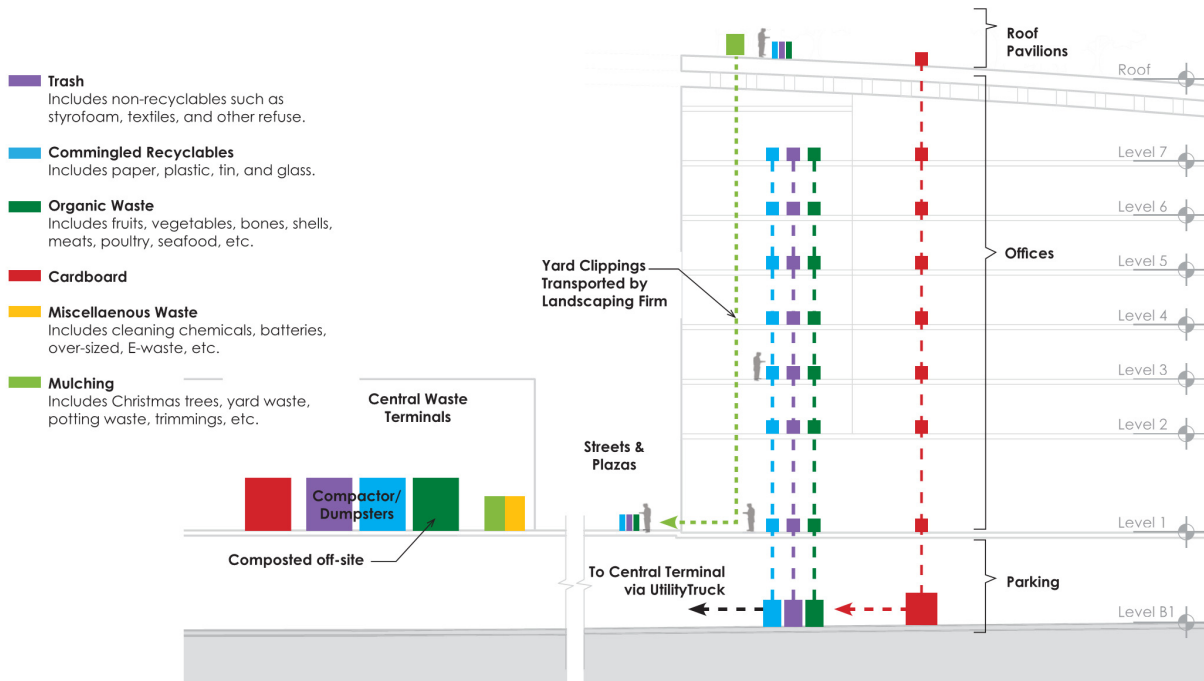


Diagram 1.4.4.2 – Office Plan at Basement Staging Areas



A Tug system will take towable carts from the Trash Rooms to staging area under each Central Waste Terminal, and then manually taken to staging rooms/areas on both the Basement Level and First Floor soiled dock or direct to compactor-containers for the principle waste streams.

Principle waste types, including (1) General Trash, (2) Commingled Recyclables, (3) Organics, and (4) Cardboard will be taken to compactor containers at each respective CWT.

#### **1.4.5 Garden-Roof Top and Public Areas Waste Strategy**

Garden-roof top and public area wastes (street, parking) will be collected at point of generation by facility maintenance and either taken direct to the CWT or brought to Basement Level Trash Rooms.

For wastes staged in basement trash rooms, a Tug system will take towable carts from the Trash Rooms to staging area under each CWT, and then manually taken to staging rooms/areas on both the Basement Level and First Floor soiled dock.

Principle waste types, including (1) General Trash, (2) Commingled Recyclables, (3) Organics, and (4) Cardboard will be taken to compactor containers at each respective CWT and put into hopper for compaction.

### **1.6 WASTE GENERATION ESTIMATE**

See Tables 1 and 2 for the estimated volumes of general trash, recyclables, hazardous and other specialty wastes that will be generated from residents and commercial facilities of retail and offices. The provided estimate is utilized as basis for waste area design and equipment/system planning.

Actual waste diversion to landfill can increase/decrease based on the goals and effectiveness to carry out recycling programs by facility management and individual tenants and residents.

Total expected waste volume to be generated is estimated to be 1,714 cubic yards per week. Of this volume it is estimated for system planning that 1,089 cubic yards to be diverted on site from general landfill trash through recycling streams.

**TABLE 1 – PRELIMINARY WASTE GENERATION PER BLOCK**

Summary of the Waste Generation Estimate volumes by Block / Building

<b>WASTE SUMMARY</b>	<b>Total Waste Generation Estimate (CY) per week</b>	<b>Total Waste Diversion Estimate (CY/Wk)</b>	<b>General Trash Uncompacted (CY/Wk)</b>	<b>General Trash Compacted 3:1 Ratio (CY/Wk)</b>
<b>WEST SIDE</b>				
<b>BLOCK 1</b>	<b>251.8</b>	<b>158.5</b>	<b>93.3</b>	<b>31.1</b>
<b>BLOCK 2</b>	<b>222.5</b>	<b>139.4</b>	<b>83.2</b>	<b>27.7</b>
<b>BLOCK 3</b>	<b>192.9</b>	<b>120.0</b>	<b>72.9</b>	<b>24.3</b>
<b>BLOCK 4</b>	<b>183.1</b>	<b>114.6</b>	<b>68.5</b>	<b>22.8</b>
<b>BLOCK 5</b>	<b>72.0</b>	<b>44.9</b>	<b>27.1</b>	<b>9.0</b>
<b>BLOCK 6</b>	<b>61.8</b>	<b>39.6</b>	<b>22.3</b>	<b>7.4</b>
<b>West Subtotal</b>	<b>984.1</b>	<b>616.9</b>	<b>367.2</b>	<b>122.4</b>
<b>EAST SIDE</b>				
<b>BLOCK 7</b>	<b>68.4</b>	<b>43.8</b>	<b>24.6</b>	<b>8.2</b>
<b>BLOCK 8</b>	<b>62.6</b>	<b>40.1</b>	<b>22.5</b>	<b>7.5</b>
<b>BLOCK 9</b>	<b>101.5</b>	<b>56.9</b>	<b>44.6</b>	<b>14.9</b>
<b>BLOCK 10</b>	<b>97.5</b>	<b>60.5</b>	<b>36.9</b>	<b>12.3</b>
<b>BLOCK 11</b>	<b>258.1</b>	<b>158.9</b>	<b>99.1</b>	<b>33.0</b>
<b>East Subtotal</b>	<b>588.0</b>	<b>360.2</b>	<b>227.8</b>	<b>75.9</b>
<b>ROOFTOP / YARD</b>	<b>72.5</b>	<b>67.3</b>	<b>5.2</b>	<b>1.7</b>
<b>STREET / PATHWAYS (Level 1)</b>	<b>34.4</b>	<b>22.4</b>	<b>12.1</b>	<b>4.0</b>
<b>PARKING</b>	<b>34.9</b>	<b>22.7</b>	<b>12.2</b>	<b>4.1</b>
<b>Rooftop / Street / Parking Subtotal</b>	<b>141.9</b>	<b>112.4</b>	<b>29.5</b>	<b>9.8</b>
<b>Grand Total</b>	<b>1,714</b>	<b>1,089</b>	<b>625</b>	<b>208</b>

**TABLE 2 – PRELIMINARY RECYCLABLES PER BLOCK**

Summary of the Recyclables breakdown by Block / Building

RECYCLABLES BREAK-DOWN	(1) Organics (CY/Wk)	(2) Corrugated Cardboard (CY/Wk)	(3) Commingled Recyclable (CY/Wk)	(4) Donatable Materials (CY/Wk)	(5) E-Waste & Recyclable Hazardous (CY/Wk)	(6) Non-Recyclable Hazardous (CY/Wk)
<b>WEST SIDE</b>						
BLOCK 1	46.2	49.0	50.6	5.2	5.0	2.5
BLOCK 2	45.3	35.9	46.2	5.3	4.5	2.2
BLOCK 3	44.4	22.8	41.7	5.4	3.9	1.9
BLOCK 4	37.5	29.2	38.1	4.4	3.7	1.8
BLOCK 5	15.7	9.9	15.3	1.9	1.4	0.7
BLOCK 6	13.6	9.3	12.4	1.2	2.5	0.6
<i>West Subtotal</i>	<b>202.6</b>	<b>156.0</b>	<b>204.2</b>	<b>23.4</b>	<b>20.9</b>	<b>9.8</b>
<b>EAST SIDE</b>						
BLOCK 7	15.0	10.3	13.7	1.4	2.7	0.7
BLOCK 8	13.8	9.4	12.5	1.3	2.5	0.6
BLOCK 9	23.8	11.2	15.9	2.9	2.0	1.0
BLOCK 10	23.0	10.6	21.2	2.8	1.9	1.0
BLOCK 11	45.4	38.7	51.6	10.3	10.3	2.6
<i>East Subtotal</i>	<b>121.0</b>	<b>80.1</b>	<b>114.9</b>	<b>18.7</b>	<b>19.5</b>	<b>5.9</b>
ROOFTOP / YARD	62.0	-	5.2	-	-	-
STREET / PATHWAYS (Level 1)	10.3	-	12.1	-	-	-
PARKING	10.5	-	12.2	-	-	-
<i>Rooftop / Street / Parking Subtotal</i>	<b>82.8</b>	<b>-</b>	<b>29.5</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Grand Total</b>	<b>406.5</b>	<b>236.1</b>	<b>348.6</b>	<b>42.0</b>	<b>40.5</b>	<b>15.7</b>

(1) Organic Wastes include items such as fruits, vegetables, eggs, paper egg containers, plants, coffee grounds, filters, tea bags, soiled paper products (napkins, towels), daily on-site yard maintenance, etc.

(2) Corrugated Cardboard

(3) Co-mingled Recyclables include plastic, cans, glass, clean mixed paper.

(4) Donatable Materials include items such as clothing, shoes, sporting equipment, household items, non-perishable foods, furniture, etc.

(5) E-Waste & Recyclable Hazardous Materials include print cartridges, computers, phones, electronic cords, batteries, light bulbs, cooking oil, etc.

(6) Non-Recyclable Hazardous Materials include paints, aerosol cans, chemicals, hazardous oils, medical waste, sharps (note: bio-hazardous and chemical waste requires special processing off-site)

### 1.7 THIRD PARTY WASTE HAULER

The local waste hauler for commercial and residential for this project will be Recology South Bay, which will handle general trash, cardboard, commingled recyclables (single stream), organic/compostable wastes, and other hazardous and non-hazardous specialty wastes.

There will be some private haulers for some of the specialty wastes, which may include cooking oil, donatable items, some hazardous and non-hazardous wastes, etc.

Yard waste collected by on-site daily landscape maintenance will be taken to the waste management centers and put into organics recycling stream. Off-site landscape vendors who provide maintenance services on regular basis will take their yard waste off-site directly to composting facility.

### 1.8 PRELIMINARY WASTE EQUIPMENT AND SPACE PROGRAM

The following reviews the various waste types and recommendations for space allocations and major equipment. The recommendations are based on two (2) Waste Management Centers for the East and West side parcels respectively.

The volume of general / landfill waste is sufficient to justify compactor-container system. Compaction rate is estimated at 3:1 ratio. It is estimated that 5% of general trash is “non-compactable” and requires separate dumpster bins to hold this waste.

**General Trash:**

	WEST	EAST
<b>Uncompacted CY</b>	348.83	216.45
<b>Compacted CY</b>	116.28	72.15
<b>Area Requirement</b>	2 truck bays	1 truck bay
<b>Size Container</b>	35 CY	35 CY
<b>Pick-Up</b>	2 / Wk each	~2 / Wk
<b>Non-Compactable CY</b>	18.36	11.39
<b>Dumpster Size CY</b>	3.00	3.00
<b>Pick-Up</b>	1 / Wk	1 / Wk
<b>No. Dumpster Bins</b>	6.1	3.8
<b>Adjusted No. Bins</b>	6.0	4.0
<b>Bin Area Req. SF</b>	135.0	90.0

The volume of Organic waste is sufficient to justify compactor-container system. Compaction rate estimated at 3:1 ratio.

**Organics:**

	WEST	EAST
<b>Uncompacted CY</b>	257.30	149.2
<b>Compacted CY</b>	85.77	49.73
<b>Area Requirement</b>	1 truck bay	1 truck bay
<b>Size Container</b>	35 CY	25 CY
<b>Pick-Up</b>	2 / Wk	2 / Wk

The volume of Commingled Recyclables (single stream glass, plastics, metal, and clean mixed paper) is sufficient to justify compactor-container system. Compaction rate estimated at 2:1 ratio.

**Commingled:**

	WEST	EAST
<b>Uncompacted CY</b>	19.48	125.0
<b>Compacted CY</b>	9.74	62.48
<b>Area Requirement</b>	1 truck bay	1 truck bay
<b>Size Container</b>	35 CY	30 CY
<b>Pick-Up</b>	2-3 / Wk	2 / Wk

The Volume of Cardboard waste is sufficient to justify compactor-container system with auger. Compaction rate with auger estimated at 12:1 ratio.

**Cardboard:**

	WEST	EAST
<b>Uncompacted CY</b>	156.02	80.1
<b>Compacted CY</b>	13.00	6.68
<b>Area Requirement</b>	1 truck bay	1 truck bay
<b>Size Container</b>	15 CY	10 CY
<b>Pick-Up</b>	1 / Wk	1 / Wk

In addition to dumpster bins, include secured room/cage for non-perishable food donation items, and area for recyclable furniture holding. Estimate 50% of donatable items to be in dumpster bins.

**Donatable Items:**

	WEST	EAST
<b>Volume CY</b>	11.68	9.3
<b>Dumpster Size CY</b>	3.00	3.00
<b>Pick-Up</b>	1 / Wk	1 / Wk
<b>No. Dumpster Bins</b>	3.5	2.8
<b>Adjusted No. Bins</b>	4.0	3.0
<b>Bin Area Req. SF</b>	90.0	67.5
<b>Secured Store Req. SF</b>	60.0	60.0

Part of the recycling volume is applied to used cooking oil from commercial restaurants, which require holding tank(s) at the soiled dock. Remainder of E-Waste and Recyclable Hazardous to be placed in 96-gallon carts for pick-up.

**E-Waste & Recyclable Hazardous Waste:**

	WEST	EAST
<b>Volume CY</b>	19.87	18.6
<b>Bin Size (Gal.)</b>	96.00	96.00
<b>Gallons per 1 CY</b>	202.00	202.00
<b>Pick-Up</b>	1 / Wk	1 / Wk
<b>No. Bins Req.</b>	41.8	39.1
<b>Adjusted No. Bins</b>	42.0	40.0
<b>Bin Area Req. SF</b>	378.0	360.0
<b>Oil Tank(s) Req. SF</b>	60.0	N/A

In addition to 96-gallon carts for pick-up, include fire-rated room or flammable holding cabinets. Estimate 50% of non-recyclable hazardous items to be held in carts.

**Non-Recyclable Hazardous Waste:**

	WEST	EAST
<b>Volume CY</b>	4.92	2.9
<b>Bin Size (Gal.)</b>	96.00	96.00
<b>Gallons per 1 CY</b>	202.00	202.00
<b>Pick-Up</b>	1 / Wk	1 / Wk
<b>No. Bins Req.</b>	10.4	6.2
<b>Adjusted No. Bins</b>	11.0	7.0
<b>Bin Area Req. SF</b>	92.4	58.8
<b>Secured Store Req. SF</b>	60.0	60.0

END OF REPORT