

Waste Characterization Study

Overview:

On November 6, 2019, AS Recycling, AS Sustainability, and Green Campus conducted a sample waste audit of CSU, Chico's discards. The study was conducted in order to better understand what streams of waste campus is generating from where, opportunities for improvement, and the amount of waste that has the potential to be diverted from landfill.

The previous waste audit took place in 2011 and new data was required in order to locate the areas of improvement. The California State University system has a mandated goal of diverting 80% of waste from landfill and CSU, Chico has set its own goals of achieving zero waste by 2030.

Based on the TRUE Zero Waste certification system, zero waste is defined as achieving $\geq 90\%$ diversion from landfill, incineration, or entry into the environment. Our best estimation of current diversion rates is 25-30%, leaving a lot of room for improvement.



Process:

The audit was conducted in front of the Student Services building to educate passing students on what is being sent to the landfill and create a visual to inspire changing consumption behavior.

One bag was collected from each building on campus and labeled with where it originated from. There were multiple bags collected from larger buildings like MLIB, Butte, Holt, and BMU. The FMS Custodial team collected the bags and brought them to the sorting area for the team of volunteers.

Bags were sorted into landfill, cans and bottles, compost, and paper and cardboard.

The setup involved five tables for sorting, tarps to display waste, easy ups, a luggage scale to weigh sorted material, and labeled sorting bins for compost, fibers, cans and bottles, and foods scraps.

Results and Trends:

Bags from each building differed in contents illuminating some clear trends regarding waste streams. Out of the total amount of material collected, 23% had the potential to be recycled or composted. The remaining 77% of material fated for the landfill was mostly comprised of single use items such as food packaging, to-go containers, coffee cups, gloves, and plastic bags. The majority of the food packaging, to-go containers, and coffee cups originated from off of campus which presents unique challenges as we attempt to divert material from landfill.

Food waste was especially prevalent in bags from MLIB, Holt and Butte but lacking in most other buildings. This is likely due to those building's proximity to Butte Station, Holt Station, and Marketplace. MLIB had large amounts of food wrappers, plastic snack bags, single use beverage cups, and recyclable beverage containers.

Laboratory materials were found in the Holt bags which entails gloves and massive amounts of paper towels. This trend seen in Holt is likely to be the case for the garbage cans from Physical Science's chemistry laboratories and other building that have similar activities.

Table 1. Breakdown of the total amount of waste collected

Total weight of Material Collected (295lbs.)	
Percent Landfill	77
Percent Food	8
Percent Cans and Bottles	7
Percent Paper	8
	100

Table 2. Breakdown of bags collected from indoor locations

Bags Collected from Indoor Locations	
WREC (AS)	1
Holt (Food Science, Lab, Office)	3
O'Connell	1
SSC	1
BMU (Dining, Public Space, AS)	3
PAC	1
Arts	1
Ayers	1
Kendall	1
Trinity	1
MLIB	1 per floor
Glenn	1
Selvesters	1
Physical Science (Chemistry, Physics, Geology, and Environmental)	4
Yolo	1
Plumas	1 per floor
Tehema	1
Butte	2
AJH	1
Modoc	1

Table 3. Breakdown of bags collected from outdoor locations

Bags Collected from Outdoor Locations	
WellCat	1
Stadium	1
Holt Station	1
Butte Station	1
Butte Hall	1
First Street	2



Figure 2. Landfill pile: contaminated food wrappers, plastic bags, coffee cups, food packaging, and gloves



Figure 3. Recyclable piles (near to far): Cans and bottle pile, fibers pile, and compostable.



Figure 4. Snapshots of collected sample bags of waste

Recommendations:

Signage and education should be at the forefront of campus priorities in the future to better inform students, faculty, and staff of their purchasing behavior. There should be a recycling bin by every trash can, so the recycling of cans and bottles becomes more convenient. To divert more food waste, compost bins could be placed near locations selling food such as Butte Station, Holt Station, MLIB, and BMU. Single use food packaging was among the most common discarded item and should be eliminated through education in behavior changes and procurement in following years.

The next waste characterization study should include a better sampling of bags from the various floors and locations. For 1st street surveying, 3-4 bags should be collected from locations surrounding the BMU/MLIB and more from the Laxon/Arts area. Sampling by SE corner of Holt at the corner of Arcadian/Sowilleno near the hot dog vendor would be recommended to understand the waste generation in a highly trafficked area of north campus.