

# Waste Audit Report

# Sample

December 1, 2023





# INTRODUCTION

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Zero Waste Tower, a 37-story mixed-use skyscraper in Anytown, USA, is a prime example of sustainable urban development. It offers some of the most spectacular views in the city, and its facilities include approximately 500,000 square feet of Class A office space, a street-level restaurant, a public plaza, 215 rooms in the city's first four-star hotel, and 28 luxury private residences on the top floors.

Zero Waste Tower houses multiple dining venues, including a full-service restaurant and bar, and a café. Situated at a major urban intersection, the tower is part of a vibrant neighborhood that boasts a variety of amenities, such as dining, shopping, entertainment, and access to extensive trails and public transit.

Sustainability is at the heart of Zero Waste Tower's design. The building incorporates advanced safety features like air handling systems with virus-killing technology, touchless bathrooms, and smart elevators. It supports sustainable transportation with electric vehicle charging stations and leverages the local district energy system for heating and cooling, aiding in carbon reduction. Sustainable construction elements include LED lighting, an energy management control system, high-performance glass, light control sensors, and energy-efficient transformers.

This project reflects the developer's dedication to environmental stewardship, focusing on reducing carbon footprints and integrating sustainability throughout the building's life cycle. Zero Waste Tower is recognized for its green efforts, evident in its various certifications. These include a Fitwel One Star rating, WELL Certifications by tenants, and an ongoing LEED certification process, all underscoring its commitment to sustainability.

In addition to its environmental focus, Zero Waste Tower also contributes economically and socially. Its involvement in affordable housing initiatives and support for diverse and women-owned vendors showcases the project's role in fostering a balanced urban development that considers environmental, social, and economic factors.



# WASTE AUDIT PROCEDURE

To analyze a normal collection cycle for the building, Waste2Zero conducted a waste audit of one day's waste collected on December 1, 2023. The audit included all waste from building occupants and visitors and represented 100% of the waste collected by the building's janitorial staff during a 24-hour period of occupied floors. Hotel waste was weighed as unique floors from office waste on the same level, for greater detailed reporting. Private Residence floors have single trash chutes connecting all such floors, so can only be measured as a single 'floor block' in the data set.

SIG coordinated with the building's janitorial staff to receive bags to be sorted from the day's waste. Black bags were received and sorted for intended trash, clear bags for diverted recyclables and green bags for sorting to compost (latter categories both classified as diversion). Our waste audit team weighed the waste and sorted the materials onsite into categories.

During this process, auditors made observations and took photographs, both of systems throughout the building and of materials during the audit. Upon completion of the audit, all residuals were placed into the dumpster, all compost into compost container and all recyclables placed in the recycling compactor.

SIG's consultants sorted the Recyclables, Compost and Residuals streams into the following material categories: Mixed Paper, Plastics, Metals, Cardboard/Paperboard, Glass, Foam, Bathroom Trash, Batteries/E-waste, Compostables, and Residual Waste.

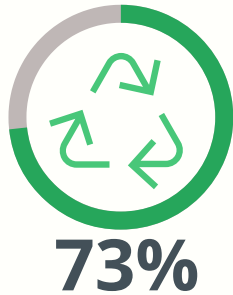
The audit team received special local guidance for recyclables and compostable items (aka organics recycling) affecting the audit process from property's hauler as well as from facilities staff.

# WASTE AUDIT RESULTS



## Zero Waste Tower

SIG conducted a waste audit on waste generated. At the time of the audit, the building had recycling and composting programs in place, allowing for the collection of Mixed Paper, Plastics, Metals, Cardboard, Glass, Bathroom Trash, Batteries/E-waste, and Compost but NOT foam. Compost accepted included food scraps, Bathroom Trash and most non-recyclable paper/cardboard products. Auditors counted compost and recyclables in the diversion stream.



### Diversion Rate

The audit showed that 73% (1,856 lbs.) of the waste stream was sorted for diversion to recycling and compost by building tenants and the janitorial team.



### Potential Diversion Rate

Diversion could have been improved by 306 lbs. for a Potential Diversion Rate of 85%, if ideal separation and rinsing procedures had been observed.


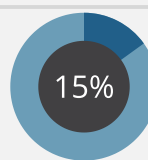
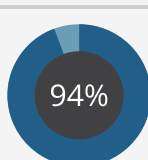

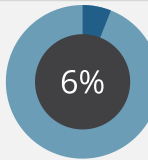
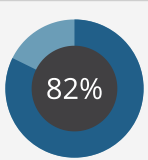

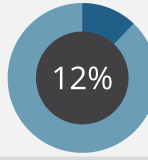
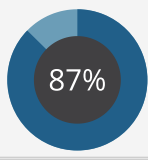

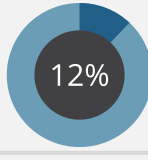
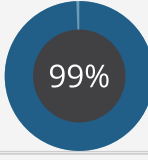

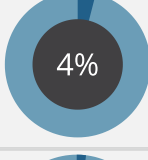
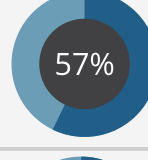

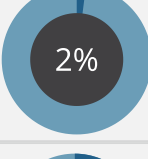
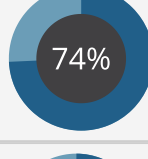

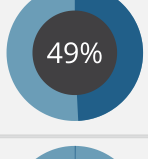
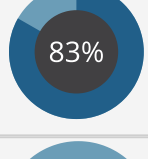

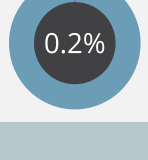
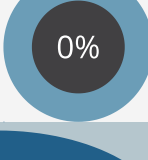




### Contamination Rate

Within the diversion streams, only 34 lbs. of trash contaminated it, a rate of just 2% (though Floor 16 had a notably high 26% contamination rate primarily due to batteries in trash).

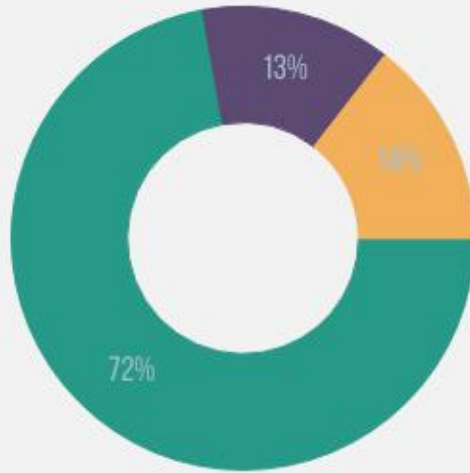
# Summary Table

Audit Date: 12/01/2023

MATERIAL	Total Weight (LBS)	PERCENT OF TOTAL	DIVERTED Weight (LBS)	% CORRECTLY SORTED
 Residual (Landfill)	372.5	 15%	21.6	 94%
 Mixed Paper	144.4	 6%	118.7	 82%
 Cardboard	316.3	 12%	274.6	 87%
 Glass	293.1	 12%	289.9	 99%
 Plastic	107.5	 4%	62.4	 57%
 Metals	55.8	 2%	41.8	 74%
 Compost/Organics	1245.5	 49%	1043.4	 83%
 E-Waste	5.5	 0.2%	2.3	 0%
Total Building Waste (Trash + Recycle)  <b>2543.9 lbs.</b>		Total Diverted to Recycle  <b>1855.7 lbs.</b>		

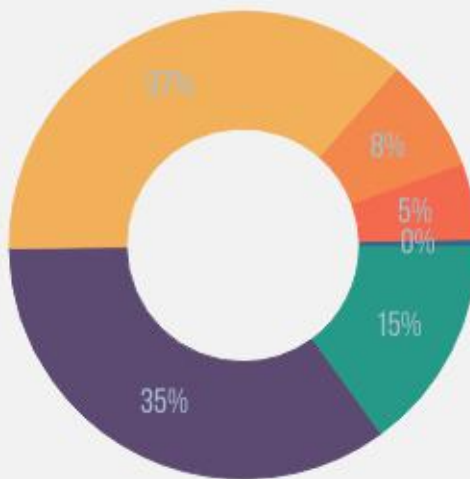
# BUILDING BREAKDOWN CHART

## BUILDING WASTE BREAKDOWN



- TOTAL DIVERSION STREAM: 72%
- TOTAL POTENTIAL DIVERSION: 13%
- TOTAL RESIDUAL 14%

## BUILDING DIVERSION BREAKDOWN

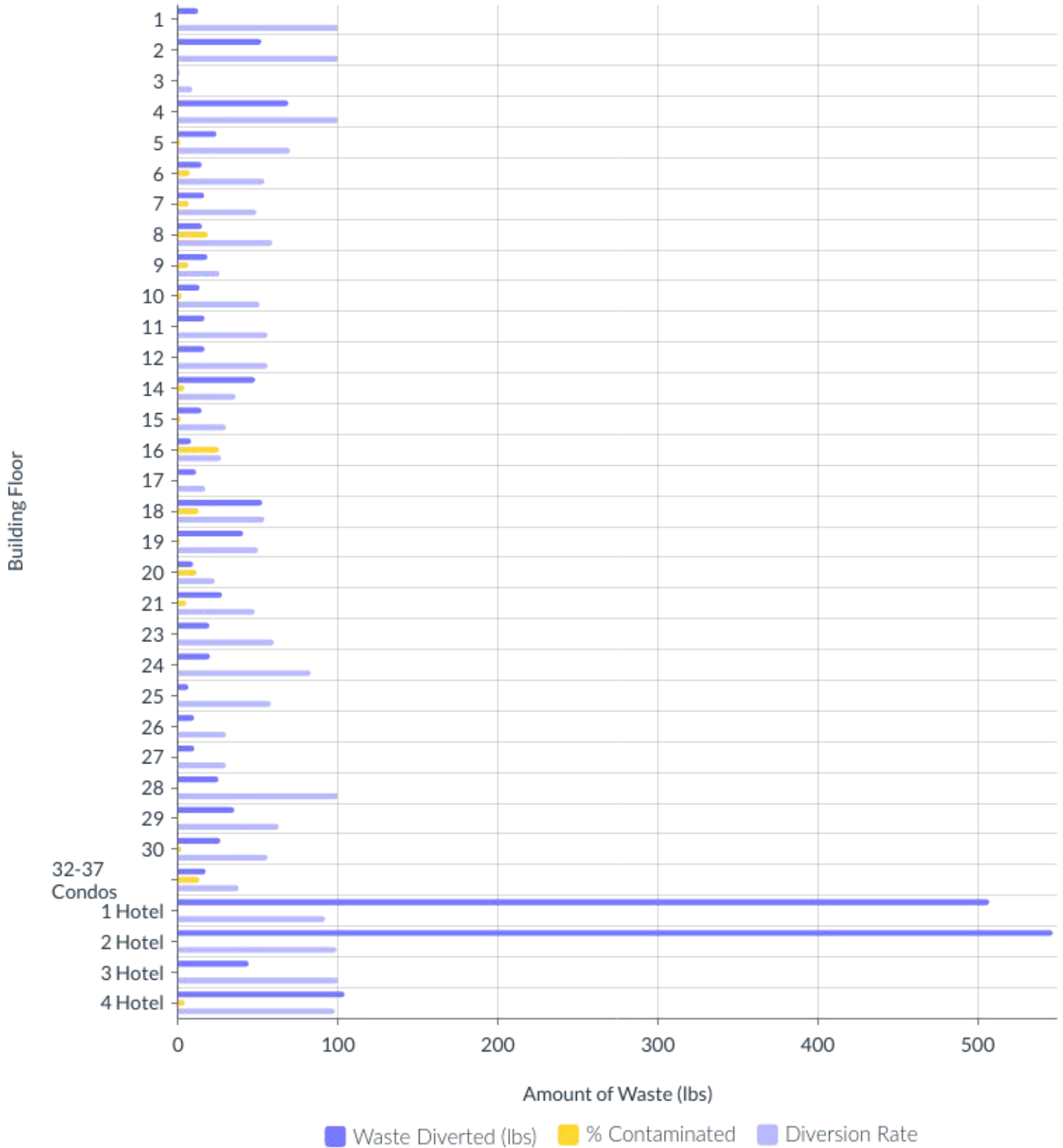


- MIXED PAPER 15%
- CARDBOARD 35%
- GLASS 37%
- PLASTIC 8%
- METAL 5%
- E-WASTE 0%



## Floor Comparison (Diversion & Contamination)

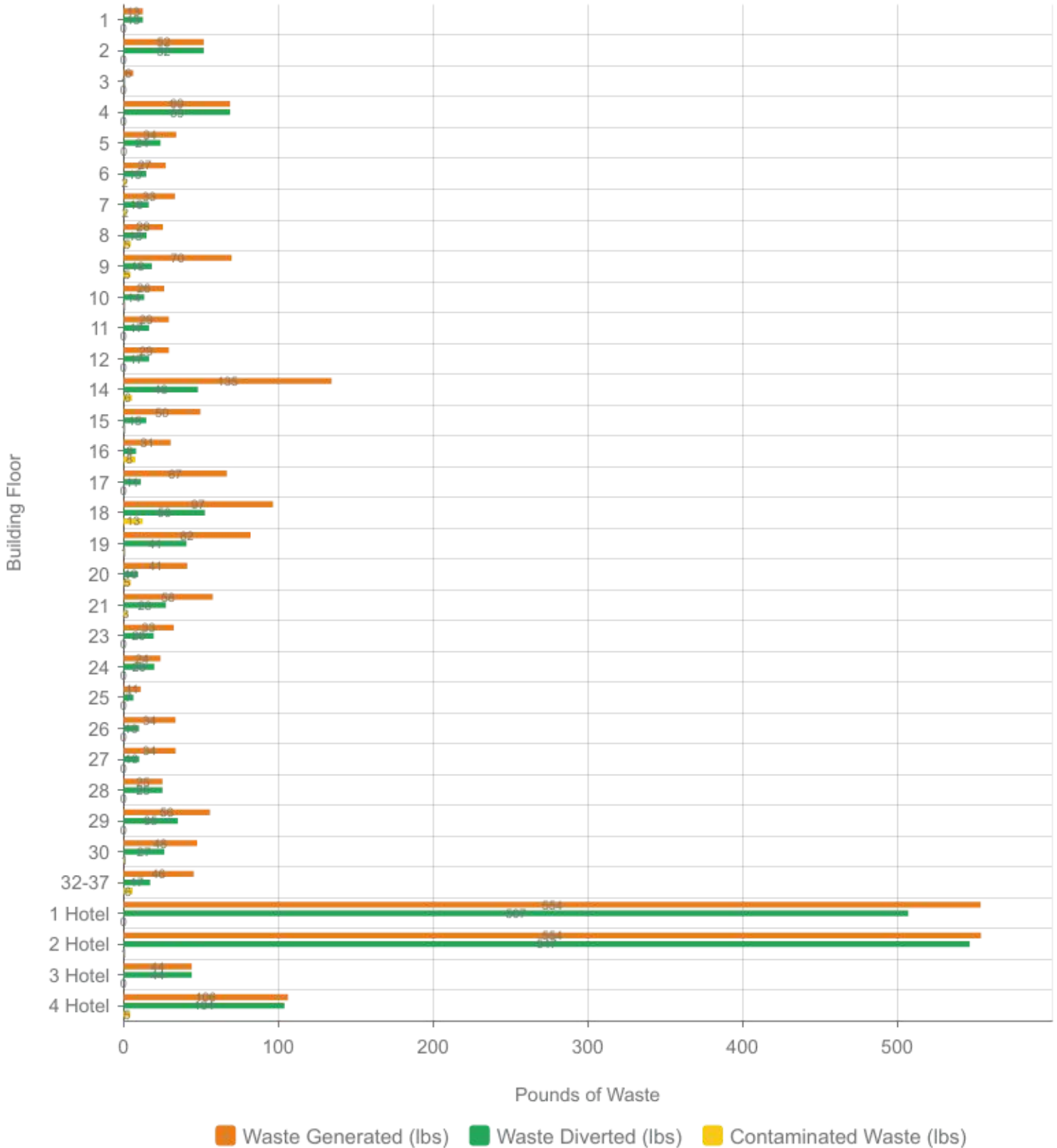
This is where we show each occupied Floor's diversion and contamination levels. This graph shows how much went to recycling, and how much trash or contamination was found in that recycling.





### Floor Comparison (Weight & Contamination)

This is where we show each occupied floor's waste and recycling volume by weight. This graph also shows how much trash was found in the recyclables stream and the volume diverted.





# Waste Totals by Floor

Floor	Total Weight (lbs)	Waste Diverted (lbs)	Diversion Rate (%)
1	12.6	12.6	100%
2	52	52	100%
3	6.4	0.6	9%
4	69	69	100%
5	34.2	24	70%
6	27.4	14.8	54%
7	33.4	16.4	49%
8	25.6	15	59%
9	70	18.4	26%
10	26.4	13.5	51%
11	29.4	16.6	56%
12	29.4	16.6	56%
14	134.6	48.2	30%
15	49.8	14.8	27%
16	30.6	8.2	17%
17	66.9	11.3	54%
18	96.7	52.7	50%
19	82.2	40.8	23%
20	41.3	9.5	48%
21	57.8	27.5	60%

# Waste Totals by Floor

## Continued

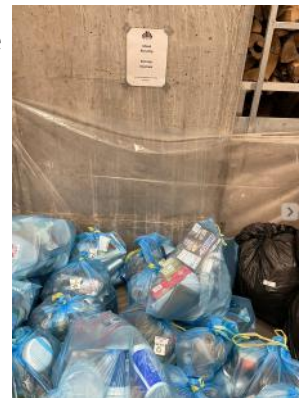
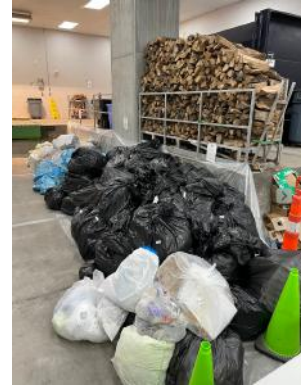
Floor	Total Weight (lbs)	Recycling + Compost Weight (lbs)	Diversion Rate (%)
23	32.6	19.6	60%
24	24	20	83%
25	11.2	6.5	58%
26	33.7	10.1	30%
27	33.8	10.2	30%
28	25.3	25.3	100%
29	56	35.2	63%
30	47.7	26.5	56%
32-37	45.5	17.3	38%
1 Hotel	554.1	507.3	92%
2 Hotel	554.3	547	99%
3 Hotel	44.2	44.2	100%
4 Hotel	106.4	104.1	98%

# A Closer Look: Audit Findings & Processes



## Special Notes

- Staff did an **excellent job labeling bags and delivering them to the sorting area.**
- Recycling and trash dumpsters were easy to find and clearly separated, including distinctive green compost bags.
- Building offered **clear e-waste and battery collection** at several points as well, contributing to the overall low levels of e-waste uncovered during the process.
- **Notably, Floors 3, 9, 16, 17 & 20 had diversion rates below 30%, setting them apart from all the Hotel Floors and floors 1, 2, 4 & 28, which all had diversion rates over 90%. These floors will be key points of focus for improving the success of Zero Waste Tower's overall program.**
- Likewise, Residential floors diverted only 38% of their waste, and had a rather high rate of contamination of their recyclables. This indicates **signage for residents may be lacking in clarity** or that there remain significant opportunities to invite tenants into experiencing the prestige and honor each floor could experience by setting itself apart with more competent recycling successes. **For luxury residential units, prestige and charitable impact can often be successful motivational strategies. It may be beneficial to arrange a competition during Earth Month for residential floors,** awarding tenants of the floor with the highest clean diversion rate a special recognition plaque (like an HOA might for the most beautiful garden, but in the lobby or even by changing their floor's elevator button to an emerald one for the year) along with a donation made in the residents' honor to a charitable cause of their choosing.
- Other notable considerations from the audit were that nearly 6 pounds of batteries appeared in the waste and recycling bins on floors 16 & 20, an extraordinary amount considering it was nearly all small disposable batteries (enough almost to fill a 5 gallon bucket!) **It is advisable to engage those 2 floors in additional conversation and signage that will encourage diversion of these hazardous electronic wastes to the existing special collection streams.**



# A Closer Look: Systems & Sorting



## Special Notes

- Floors inspected demonstrated adequate, and occasionally excellent, access to diversion bins. A **best practice is locating bins near workstation zones but not at individual desks.** When tenants have to walk to dispose of waste they are more likely to sort it correctly.
- **Floors 3, 9, 16, 17 & 20 should consider optimizing their bin strategies** to improve diversion.
- Most floors co-located recycle bins by copy machines, which is another best practice.
- **Correct bag usage was nearly universal, for which janitorial staff should be highly commended.**
- The combined bin in the top left picture is somewhat notorious for how long it takes to empty and reset. **Consider upgrading these units to systems that save valuable labor hours for janitorial.**
- Restaurants were doing an **excellent job locating rolling compost bins near food prep areas.**



# A Closer Look: Audit Findings & Signage



## Special Notes

- Signage throughout the building was very good, including visuals consistent and compliant with hauler policies demonstrating what is permitted in each stream.
- Management's inclusion of visual guidance on sorting in employee dining areas was uniquely exceptional.
- Wayfinding to trash and diversion containers is excellent as well.
- Bilingual signage elaborating on sorting policies with "Do/Don't" guidance offered excellent additional insight for building staff and undoubtedly have a great deal to do with the overall high rates of diversion and clean recycling on the hotel floors where employees are most likely to be complying with existing diversion policies when communicated well.
- Many office floors lacked thorough signage. We recommend a re-check for office floors to ensure signage that is up-to-date and highly visible on all office floors.





### Special Notes

- Auditors did discover numerous recyclables contaminated with food waste and residues, rendering them unrecyclable. Remind tenants that, as a general rule, **if you wouldn't place the item as it is into an older home dishwasher, it's not yet clean enough to go into recycling. Take a moment to scrape food into trash/use a napkin to wipe it cleaner.**
- Plastic bottles with liquids must be emptied before placing in bins or they will be rejected by the recycling equipment at the sorting facility.
- Finally, **auditors were dismayed to discover substantial hazardous medical waste in hotel trash**, including multiple **hypodermic needles, blood-soaked gauze and prescription glass containers that require special disposal and handling.** The rising trend in use of injectable medications for weight loss and other medical treatments, in addition to the regular medical attention often required for professional athletes and other guests more likely to choose a high-quality accommodation such as this one, enhances our ongoing recommendation that **sharps disposal containers should be made available** in guest restrooms with special signage to indicate they are made available to better serve guests and ensure compliance with state laws forbidding sharps and medical waste in landfills. **At the very least, it is advised that some signage at check-in and special direct conversation for groups like pro athletic teams be considered, offering sharps disposal containers upon request.** The appearance of these hazards in building waste poses significant legal risk to the property, both from potential citation for illegal disposal as well as safety liabilities to employees and staff.
- These coffee pods are **recyclable only by special pickup** which is free from the manufacturer.
- E-Waste as seen below was minimal on all but a few floors.



# Waste Stream Observations



## Major Overall Observations

- The tenants performed well in earning the building a high diversion rate of 72.9%. Compost made up 49% of the waste overall and was properly sorted at a rate of 83%.
- The hotel floors exhibited excellence in both signage and sorting accessibility. Waste and Compost bins on dollies are easily moved about to the points of waste generation.
- Contamination rates overall were exceptional with 17 floors logging contamination rates of 0%-0.3%. Floor 16 had the highest contamination rate at 25%.
- **Plastic was by far the most 'missed' recyclable**, representing the best target for improvement, as only 57% of it was correctly sorted for recycling.
- **As mentioned earlier, engaging residential units in greater diversion will be key to future improvement strategies.**

## RECOMMENDATIONS:



### INCREASE TENANT EDUCATION

Ensure occupant participation is maximized by creating competitions for who has better waste diversion. Educate staff on proper waste disposal for the building.



### REMOVE DESK/OFFICE WASTE BINS

Designating a specific "trash & recycling" area in a common shared space is the most effective way to increase recycling rates. Staff are more likely to recycle when there is NO trash bin at their desk.



### PERFORM REGULAR WASTE AUDITS

Comparative results are the best way to track building improvements year over year. You can train your own staff to perform them at [www.gbcs.com](http://www.gbcs.com)!



### COMPOSTING PROGRAM

Promote the compost collection more facility-wide. Office food waste makes up much of the weight in the true landfill stream, since it is often more dense than other residual waste. It also reduces haul-offs and cuts down on smells in general bins.



### ZERO WASTE

To truly challenge yourself and set your building above the rest, consider pursuing a TRUE Zero certification. More info on the next page.



**TRUE** is the first zero waste certification program dedicated to measuring, improving and recognizing zero waste performance by encouraging the adoption of sustainable materials management and reduction practices which contribute to positive environmental, health and economic outcomes.

The transition to a truly circular economy will require us to challenge everything we've been taught about waste and begin viewing our materials or trash as a resource or an opportunity rather than something to simply discard. TRUE:

- Is designed to help guide this transition by supporting businesses and communities in re-thinking old assumptions and re-designing processes to ensure that all resources are valued for their highest and best use.
- Promotes a whole systems approach aimed at changing how materials flow through society, resulting in no waste. It focuses on upstream efforts including redesign, reduce and reuse and is not limited to downstream efforts.
- Operates with the goal to divert all solid waste from the landfill, incineration and the environment. Facilities achieve certification by meeting an average of 90% or greater overall waste diversion over a period of 12 months, as well as implementing minimum program requirements within the TRUE Rating System.

To find out more about SIG/W2Z's TRUE Certification consulting - please email [brianb@sigearth.com](mailto:brianb@sigearth.com)

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