



**Gun Lake Tribe
Casino Waste Audit Report
October 14, 2024**

**Prepared by
Sarah Archer
President & Lead Resultant
sarah@iriswds.com**



WASTE AUDIT SUMMARY

This report provides the findings of a waste audit conducted on August 21, 2024, for Gun Lake Tribe.

The main objective of the waste audit was to determine the amount and type of material being sent to the landfill. A random sample of material was collected for the audit; 400 pounds of material from the casino and 100 pounds from CBK restaurant. Each sample was sorted separately into thirty-one material categories, which included twelve materials that are being captured through existing recycling, food waste, or other diversion programs at Gun Lake Tribe.

The casino waste audit revealed that nearly 38% of all materials by weight were those that could have been captured for recycling or management through current Gun Lake Tribe materials management programs with *Food Waste* making up nearly 36% of Program Accepted Materials.

In the CBK restaurant sample, 59% of all materials by weight could have been diverted into other Gun Lake Tribe materials management programs with *Food Waste* representing 58% of the sample.

The large volume of food waste present in the waste stream indicates an opportunity for additional diversion and a gap in the current internal collection system.

INTRODUCTION

Gun Lake Tribe has an Integrated Solid Waste Management Plan (ISWMP) that was approved in 2015. Since that time, several initiatives have been implemented across the Gun Lake Tribe community towards achievement of the goals outlined in the ISWMP. The Gun Lake Tribe Casino currently recycles the following materials:

- Corrugated Cardboard
- Shredded Paper
- Michigan Deposit Containers – Plastic, Aluminum, Glass
- Large Scrap Metal
- Batteries

Pallets are collected for reuse and recycling. Food scraps are diverted to the Harp Bio-Digester where it is converted into a nutrient rich, premium output that can be used as a soil enhancer.

Casino Guest Areas Waste Audit Top 5 Material Categories *By Weight*

Food Waste – 36%

Uncategorized Residue – 19%

Non-recyclable/unacceptable Paper – 18%

Plastic Film/Flexibles – 10%

Mixed Paper – 6%

CBK Restaurant Waste Audit Top 5 Material Categories *By Weight*

Food Waste – 66%

Uncategorized Residue – 16%

Steel Cans – 8%

Plastic Film/Flexibles – 7%

Non-recyclable/unacceptable Paper – 7%

Refer to Table 2 on page 7 & Table 4 on page 11

WASTE AUDIT OBJECTIVES

The main objective of the waste audit was to determine the amount and type of material being sent to the landfill and to gain baseline data for measuring the success of existing programs and identify opportunities for program improvements and expansion to achieve additional landfill diversion.

WASTE AUDIT DESIGN & PROCESS

Iris Waste Diversion Specialists (Iris) was subcontracted by Fleis & Vandenbrink to conduct a waste stream audit to support an update to the Gun Lake Tribe Integrated Solid Waste Management Plan. A representative sample of landfill bound materials was collected from casino guest areas and the CBK restaurant by staff on August 20 and 21, 2024. The waste samples were sorted into 31 material categories.

The Iris Team and three Gun Lake Tribe staff, Juan, Leann, and Tommy performed the audit on Wednesday, August 21, 2024, sorting 400 pounds of material from the casino and 100 pounds from CBK restaurant. Trevor Hayden, Vice President of Operations, Chad Scholten, Sustainability Specialist and Shawn McKenney, Environmental Specialist contributed significantly to the coordination of the waste audit prior to and on the day of the audit.



The waste audit sort team: From left to right; Shawn (GLT), Juan (GLT), Keton (Iris), Tommy (GLT), Leann (GLT), Jean (Iris). Yes, Leann is holding strips of raw bacon!

Iris provided instruction and safety training the morning of the waste audit and supplied all personal protective equipment (PPE) including Tyvek® jump suits, aprons, sharp resistant gloves, safety goggles, and face masks. Workers were notified prior to the waste sort of appropriate apparel, footwear and headwear for the audit process.

The waste sorting area was set up in the loading dock area of the casino and the process involved opening of trash bags, assessing contents and determining categorization before placement into the appropriate labeled container. Paper cups from the casino floor often contained unfinished beverages making the sorting process wet and messy. The sorting team adapted by capturing liquids in the trash bags before removing the solid materials and then pouring the liquids into plastic tubs and buckets.

Workers were assigned to sort specific materials into containers set up directly behind them. As trash bags were opened, they placed any materials into their designated categories and passed materials to the other sorters as they came across them. This team approach added a fun, social element to an otherwise unpleasant task.

Sorting containers were filled to maximum capacity before being removed from the sorting station and taken to the scale area to record weights.



Iris Sort Team preparing waste sorting area

MATERIAL CATEGORIES

The waste sample was separated by hand into the following material categories. The categories included materials currently captured for recycling or composting, those that pose a hazard, or may have potential for diversion.

MATERIAL GROUP	MATERIAL CATEGORY
PAPER	Corrugated Cardboard
	Mixed Paper
	Aseptic and Cartons
	Non-Recyclable or Unacceptable Paper
	Shredded Paper
PLASTIC	PET Bottles and Jars MI DEPOSIT ONLY
	PET Bottles and Jars
	Non-bottle PET Containers
	Natural HDPE Bottles
	Colored HDPE Bottles
	Non-bottle HDPE Containers
	Polypropylene Bottles and Packaging
	Other Small Rigid Packaging Containers (#3, #4, #6, #7)
	Bulky Rigid Plastics
	Clean Plastic Bags and Film
	Other Plastic Film/Flexibles
	Unacceptable Rigid Plastics
METAL	Aluminum Cans MI DEPOSIT ONLY
	Aluminum Cans
	Aluminum Foil and Trays
	Steel Cans
	Large Scrap Metal
	Unacceptable Metal
GLASS	Glass Bottles and Jars MI DEPOSIT ONLY
	Glass Bottles and Jars
HHW	Batteries
	Sharps
	Hazardous/Special Waste (Fluorescent tubes)
	Unacceptable Hazardous/Special Waste
ORGANICS	Food Waste
	Unacceptable Food Waste (Bones/Crab Shells)
	Yard Waste
ELECTRONICS	E-Waste and Small Appliances
C&D	C&D Waste (Pallets)
	Unacceptable C&D Waste
OTHER	Textiles and Shoes
	Tanglers
	Non-Plastic Bulky Waste
	Uncategorized Residue

MATERIAL DATA

The graphs on the following pages depict the breakdown of the material categories. The waste data for the guest areas of the casino and the CBK restaurant are provided separately as they represent different functions and waste generators within the casino.

CASINO GUEST AREAS DATA

CASINO GUEST AREAS – WASTE AUDIT SAMPLE COMPOSITION BY MATERIAL GROUP

As shown in Table I below, the material groups most represented in the Casino Guest Areas waste audit sample were *Organics*, *Paper*, *Other*, *Plastic*, *Metals*, and *Glass*. The top four material groups represented 96% of the total sample. The six material groups present represented 100% of the waste audit sample.

Table I - Casino Guest Areas – Waste Audit Sample Composition by Material Group

Gun Lake Tribe 2024 Guest Areas Waste Audit Composition by Material Group Percentage of Total Sample Weight	
Organics	37%
Paper	25%
Other	19%
Plastic	15%
Metals	3%
Glass	1%

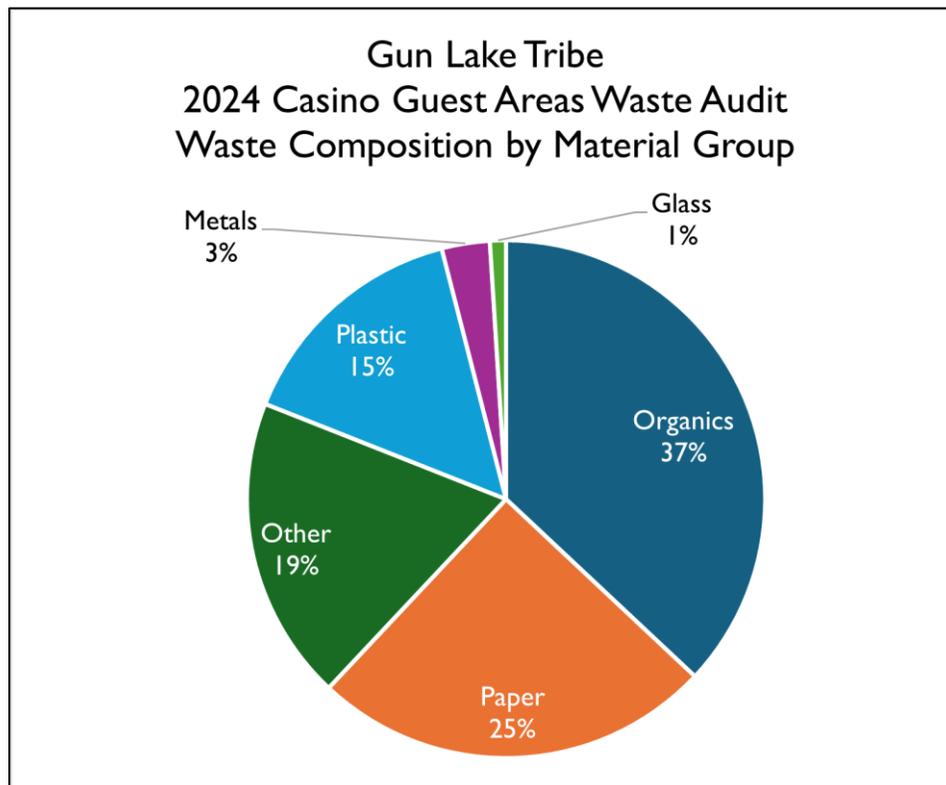


Figure I - Casino Guest Areas Waste Audit - Composition by Material Group

CASINO GUEST AREAS – TOP MATERIAL CATEGORIES – PERCENTAGE OF TOTAL SAMPLE WEIGHT

The waste stream sample for the casino guest areas consisted of fifteen of the thirty-one total material categories. Table 2 below represents the material categories with the highest representation in the waste audit sample by percentage of the total sample weight. These six categories, *Food Waste*, *Uncategorized Residue*, *Non-Recyclable or Unacceptable Paper*, *Other Plastic Film/Flexibles*, *Mixed Paper*, and *Steel Cans*, represent nearly 91% of the total sample. Nine materials made up the remaining percentage with each representing 1% or less of the total sample.

Table 2 – Casino Guest Areas Waste Audit Sample Composition - Top Materials Present

Gun Lake Tribe 2024 Guest Areas Waste Audit Top Materials Present Percentage of Total Sample Weight		
1	Food waste	36%
2	Uncategorized Residue	19%
3	Non-Recyclable or Unacceptable Paper	18%
4	Other Plastic Film/Flexibles	10%
5	Mixed Paper	6%
6	Steel Cans	2%
Top 6 Materials - Representation of Total Sample		91%

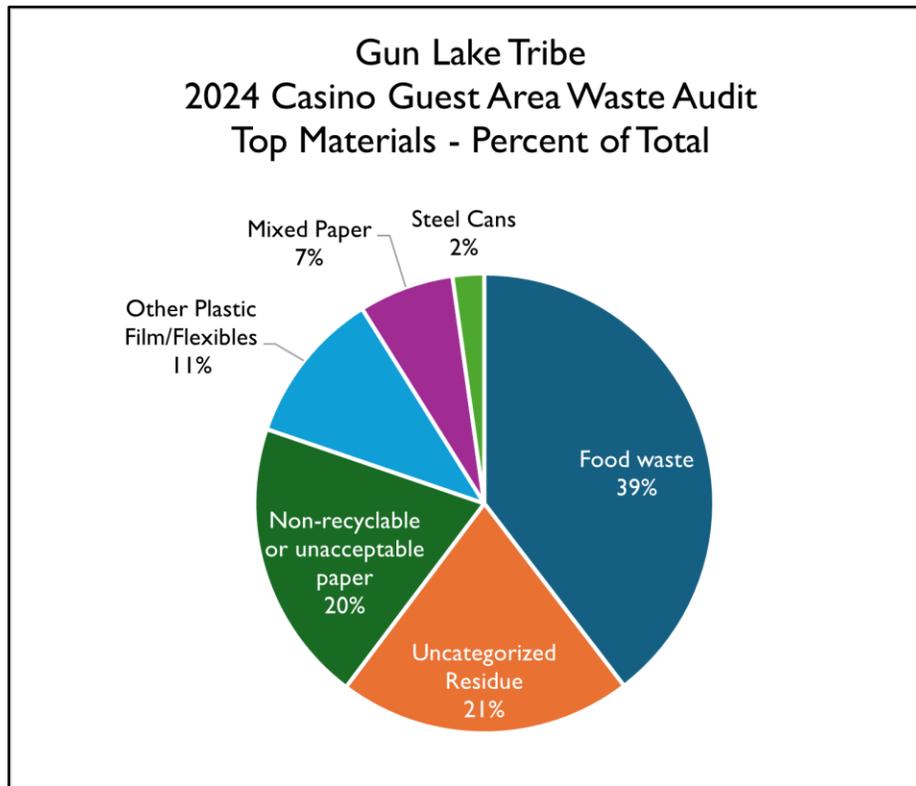


Figure 2 – Casino Guest Areas Waste Audit - Top Materials Present

Food Waste represented 36% of the total sample by weight with *Uncategorized Residue* and *Non-Recyclable or Unacceptable Paper* coming in a close second and third with 19% and 18% representation, respectively. The *Uncategorized Residue* category consisted mainly of the liquid captured from beverage cups (56.2%) and the trash bags (15.64%) that held the sampled waste. Paper towels and paper cups made up the largest portion of the *Non-Recyclable or Unacceptable Paper* category. Paper cups are commonly accepted for recycling by major material recovery facilities and were collected separately during the sorting process and notably made up nearly 30% of this category.



Sorted materials, clockwise from top left, Steel Cans, Aluminum Trays & Foil, Michigan Deposit Aluminum Cans, and Plastic PET Water Bottles.

GUN LAKE CASINO GUEST AREAS WASTE AUDIT – RECYCLABLE MATERIAL PRESENT – PERCENTAGE OF TOTAL SAMPLE WEIGHT

The Casino Guest Areas waste audit revealed 38% of materials discarded for landfill disposal to be those that could have been captured through existing materials management systems, as shown in Figure 3. A further breakdown of Program Acceptable Materials present is depicted in Figure 4, which shows Food Waste to be the dominant material at nearly 36%. The remaining six materials each represented less than 1% of the total sample.

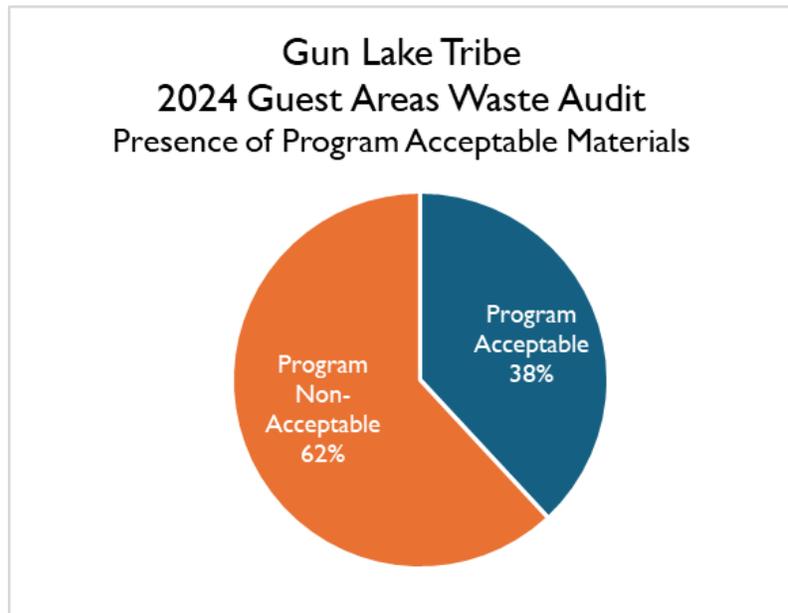


Figure 3 – Casino Guest Areas Waste Audit – Program Acceptable Materials Compared to Program Unacceptable Materials

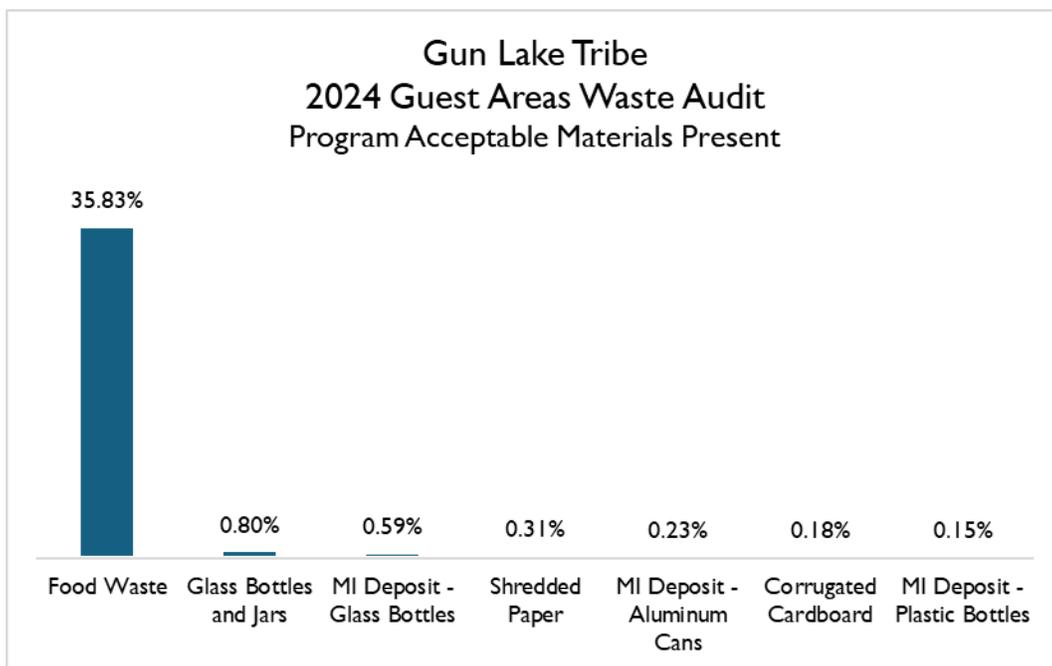


Figure 4 – Casino Guest Areas Waste Audit – Program Acceptable Materials Present

CBK RESTAURANT DATA

CBK RESTAURANT – WASTE AUDIT SAMPLE COMPOSITION BY MATERIAL GROUP

Of the five material groups that were most evident in the waste audit sample, *Organics* were significantly represented at 59% of the total sample by weight. The five material groups present represented 100% of the waste audit sample.

Table 3- CBK Restaurant - Waste Audit Sample Composition by Material Group

Gun Lake Tribe 2024 CBK Restaurant Waste Audit Composition by Material Group Percentage of Total Sample Weight	
Organics	59%
Plastic	14%
Other	11%
Paper	8%
Metals	8%

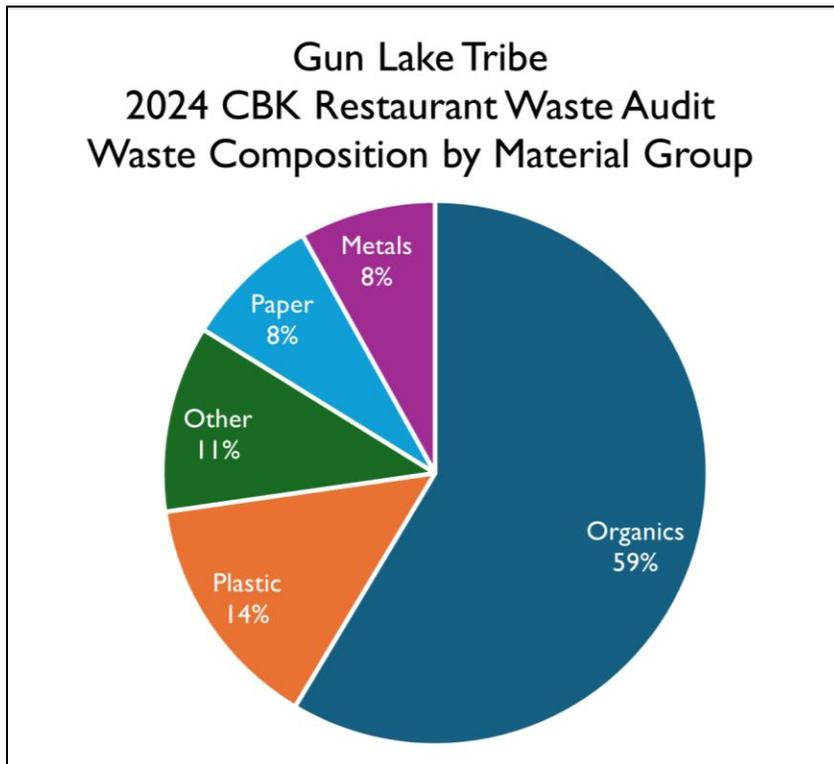


Figure 5 – CBK Restaurant Waste Audit – Waste Composition by Material Group

CBK RESTAURANT – TOP MATERIAL CATEGORIES – PERCENTAGE OF TOTAL SAMPLE WEIGHT

The waste stream sample for CBK Restaurant consisted of eleven materials from the thirty-one total categories. Table 4 below represents the material categories with the highest representation in the waste audit sample by percentage of the total sample weight. These categories represent 91% of the total sample. Six materials made up the remaining 9%, each representing 1% - 2% of the total sample.

Table 4 – CBK Restaurant – Waste Audit Sample Composition - Top Materials Present

Gun Lake Tribe 2024 CBK Restaurant Waste Audit Top Materials Present Percentage of Total Sample Weight		
1	Food waste	66%
2	Uncategorized Residue	12%
3	Steel Cans	8%
4	Other Plastic Film/Flexibles	7%
5	Non-recyclable or unacceptable paper	7%
Top 5 Materials - Representation of Total Sample		91%

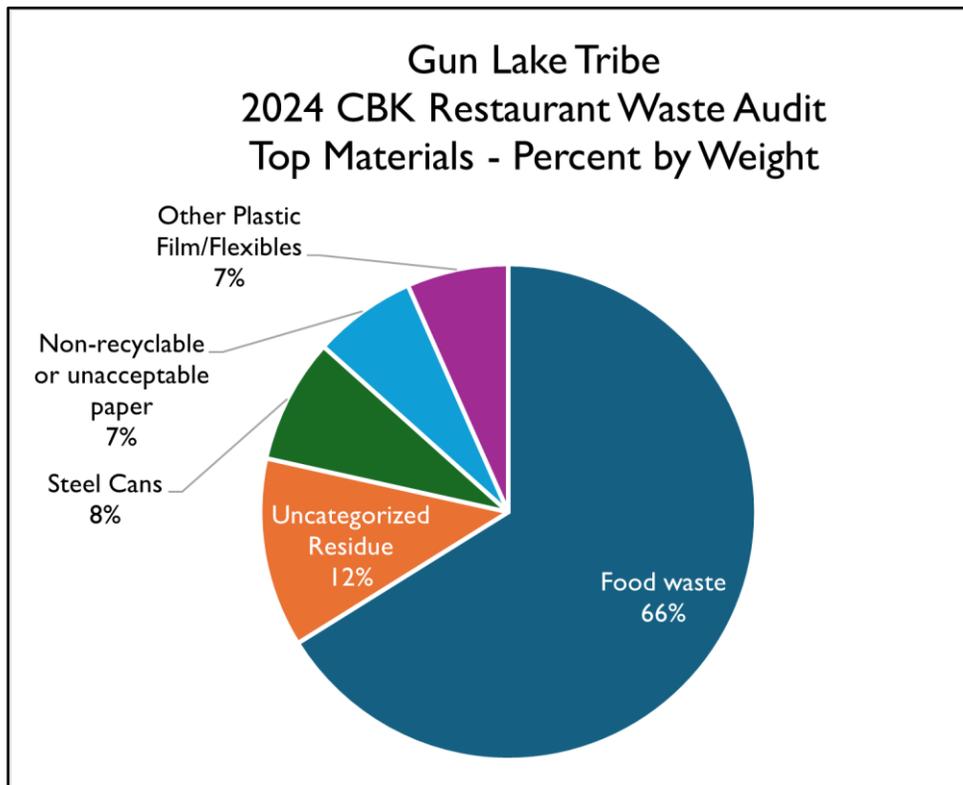


Figure 6 – CBK Restaurant Waste Audit – Top Materials Present



Steel cans - CBK Restaurant waste audit sample.



Plastic HDPE Jugs - CBK Restaurant waste audit sample.



Uncategorized Residue material category –
CBK Restaurant waste audit sample.

CBK RESTAURANT – RECYCLABLE MATERIAL PRESENT – PERCENTAGE OF TOTAL SAMPLE WEIGHT

When evaluating the waste audit for materials discarded that could have been diverted through existing programs, a larger percentage of acceptable materials was found due to the high volume of food waste present, as shown in Figure 7.

Figure 8 identifies materials found in the waste audit sample that could have been captured for recycling or management through current Gun Lake Tribe materials management programs. *Food Waste* made up 58% of the total with minimal representation of *Glass*, *Corrugated Cardboard*, and *Michigan Deposit Plastic Bottles*.

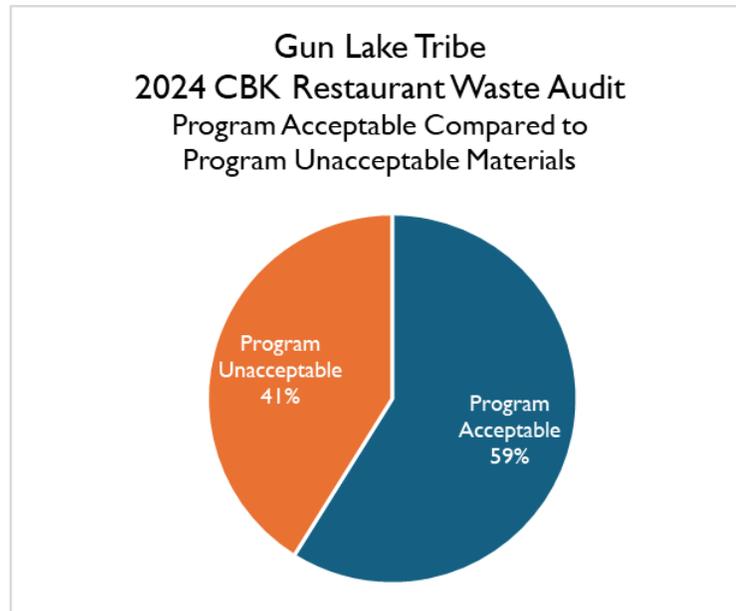


Figure 7 – CBK Restaurant Waste Audit – Program Acceptable Materials Compared to Program Unacceptable Materials

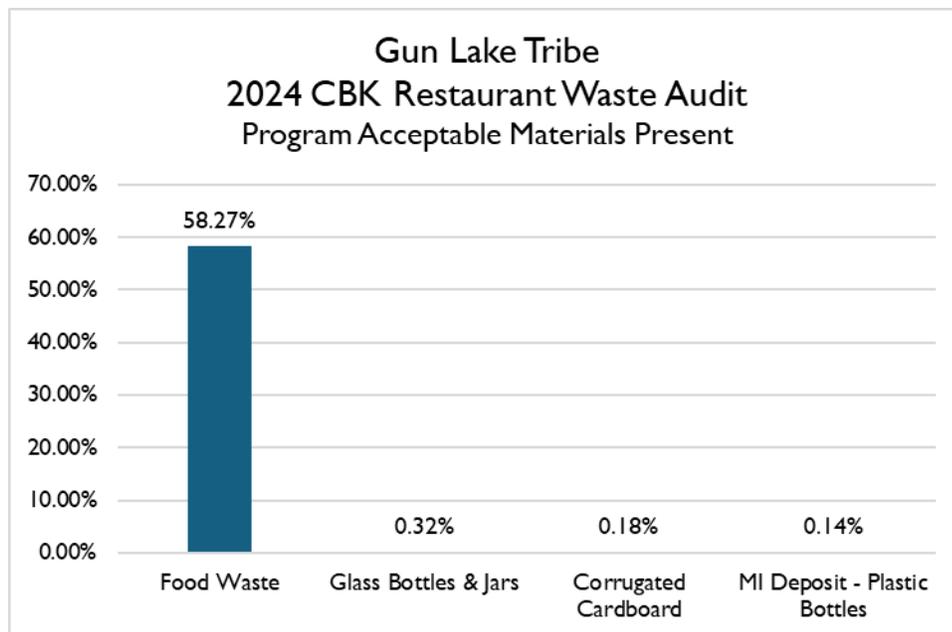


Figure 8 – CBK Restaurant Waste Audit – Program Acceptable Materials Present

RECOMMENDATIONS

Waste audits provide an interesting study of human behavior and materials management systems. The following recommendations are provided based on the data gathered from the waste audit and observations made by the audit team.

- The large volume of food waste present in the waste stream in both the Casino Guest Areas and CBK Restaurant samples indicates an opportunity for increased diversion through an evaluation of the existing internal collection systems for discarded food by customers, staff, and food preparation and disposal areas. Continued improvement in the prevention and diversion of food waste using the prescribed methods of the EPA Wasted Food Scale will achieve the greatest waste diversion impact for Gun Lake Tribe.



- The Casino Guest Areas sample had a significant number of disposable paper cups with plastic lids that still contained liquid leading the sorting team to speculate about why so many were left unfinished. Liquid adds weight to trash bags, making them heavy and difficult to handle, and increases the potential for spills during collection and transport to compactors. As systems are improved for the capture of food waste for diversion to the bio-digester, a switch to bio-based cups could be considered. Alternatively, certified compostable cups could be implemented for capture and diversion to a commercial composting facility.
- Paper towels were the predominant material in the *Non-Recyclable or Unacceptable Paper* category, a Top Material Category for both the Casino Guest Areas and CBK Restaurant audits. This product is highly compostable at a commercial composting facility and may be an acceptable feedstock for the bio-digester.

- Investigate the opportunities for expansion of materials accepted in the Gun Lake Casino recycling program. Mixed paper (including paper cups), plastic bottles and containers, and metal cans are considered part of the typical suite of accepted recyclables. Consulting with the current service provider, or other service providers in the area to learn about the potential to institute a collection system for these materials, in guest areas, administrative buildings, and back of the house operations, will further assist Gun Lake Tribe to achieve its waste diversion goals.

CLOSING

The finding of the waste audit study of the Gun Lake Casino Guest Areas and CBK Restaurant will provide baseline data and information to consider when evaluating existing programs and to inform decisions when planning future waste reduction and waste diversion initiatives. The baseline data provided in this report will serve as comparison data for future waste audit studies, which are recommended to occur every three to five years. Follow-up waste audits will help gauge the effectiveness of strategies utilized in efforts to improve diversion of materials from landfill disposal and identify system gaps that may impact achieving desired results.

Gun Lake Tribe has made notable progress towards sustainable materials management, as evidenced by the results of the waste audit, and with the hiring of a Sustainability Specialist is showing its commitment to expanding these efforts and continuing to show progressive leadership in the industry.