



# Sustainability Report 2017

## Yellowstone National Park



An annual report produced by the  
**Yellowstone Environmental  
Coordinating Committee (YECC)**

# 2017 Summary

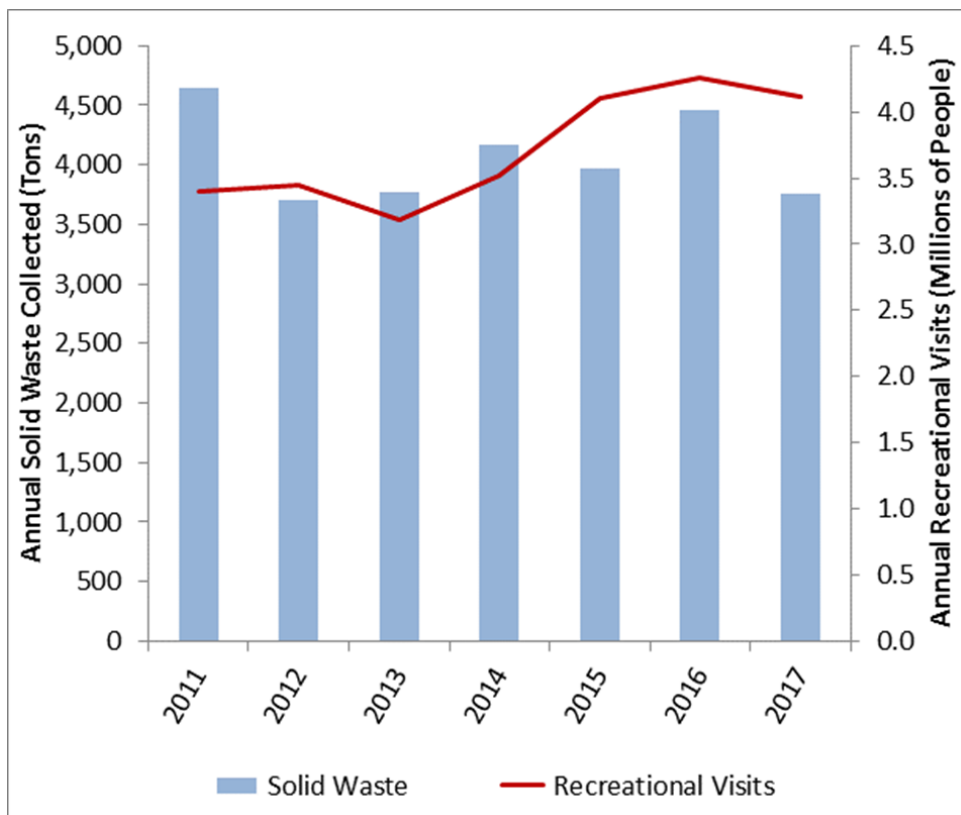
## Energy, Fuel, and Water Use and Waste Diversion

Total numbers and comparisons in the table below represent facilities and operations inside Yellowstone National Park for the National Park Service (NPS), Xanterra, and Delaware North combined.

Category	Baseline Year	Resource (unit)	Baseline Year Total	2017 Total	% Change from Baseline
Fleet Fuel	2003	Gasoline (gallons)	333,401	308,629	-7.4%
		Diesel (gallons)	171,834	258,559	50.5%
Energy	2003	Electricity (kWh)	26,768,024	31,891,104	19.1%
		Fuel Oil (gallons)	704,316	449,762	-36.1%
		Propane (gallons)	631,666	1,025,204	62.3%
Water	2007	Potable water (gallons)	271,213,835	299,039,394	10.3%
Waste	—	Municipal (% diverted, by weight)	—	60.2	—
		Construction (% diverted, by weight)	—	—	—

## Solid waste and Visitation 2011-2017

Total numbers for waste represent all operations inside Yellowstone National Park



### Annual Visitation

Year	Visits
2011	3,394,326
2012	3,447,729
2013	3,188,030
2014	3,513,484
2015	4,097,710
2016	4,257,177
2017	4,116,524

Front cover: NPS strives to recycle camping fuel canisters left by visitors.

# Introduction



*Solar panels Lamar Buffalo Ranch*

The National Park Service (NPS) mission articulates a clear ethic for environmental stewardship. Yellowstone's sustainability program extends this commitment to conservation and protection to the environmental impact of our own operations.

The Yellowstone Environmental Coordinating Committee (YECC) has embraced the goals of the NPS Green Parks Plan and works collaboratively to ensure a comprehensive approach to sustainability in Yellowstone. This team consists of representatives from the National Park Service, Xanterra, Delaware North, Medcor, Yellowstone Park Service Stations and Yellowstone Forever. We strive to use the most sustainable practices and reduce our own footprint as we serve the visiting public and manage Yellowstone for future generations.

This report is compiled by the YECC to present an annual overview of the sustainability program and share data for the park's energy, fuel, and water use and waste diversion.

## **Goals for this report:**

- Communicate achievements and challenges
- Track progress toward reducing greenhouse gas emissions, energy and water use, and waste production
- See opportunities to continually improve efforts

## **2018 priorities based on this report:**

Results in 2017 indicate that energy, fuel, and water use have all increased for the NPS. Solutions for how to reduce energy use and carbon footprint must stay a priority for the NPS in the future as this proves to be difficult with aging infrastructure. Also water infrastructure needs to be assessed for waste such as leaks and winter no-freeze running faucets. The extended season for composting seems to have helped increase the waste diversion rate, but more work needs to be done on reducing overall waste with a focus on reducing plastic waste including removing plastics from the compostable-waste stream.

## **Legislative Guidance:**

- ◇ *Executive Order 13693 (still in effect at this time)*
- ◇ *NPS Green Parks Plan*
- ◇ *Presidential Memorandum on Federal Fleet Performance 2011*
- ◇ *Energy Independence and Security Act of 2007*
- ◇ *Energy Policy Act of 2005*

# Energy

## Electricity, Propane, Fuel Oil, and Natural Gas

### **Baseline Year, 2003 (NPS, Xanterra, DNC):**

- ◇ 26,768,024 kWh
- ◇ 631,666 gal propane
- ◇ 704,316 gal fuel oil
- ◇ 10,910 ccf natural gas

### **2017 Progress (NPS, Xanterra, DNC):**

- ◇ 31,891,104 kWh = **19.1% increase**
- ◇ 1,025,204 gal propane = **62.3% increase**
- ◇ 449,762 gal fuel oil = **36.1% decrease**
- ◇ 10,879 ccf natural gas = **0.3% decrease**



Hydro turbine, Lamar Buffalo ranch

Yellowstone National Park is the largest consumer of energy in the National Park Service.

Most of Yellowstone's electricity is provided by Northwestern Energy. Their portfolio now boasts 54% renewable energy (approximately 36% hydro, 18% wind and some but less than 1% solar).

Electricity is used for lighting, appliances, computers, tools and some heating and cooling. Improving the efficiency of these applications is the most productive step we can take toward energy conservation goals.

Most of Yellowstone's building heating and cooling systems rely on fuel, either diesel (fuel oil) or propane. Other common users of fuel for direct heat and power are water heaters, kitchen appliances and generators. Renovating Yellowstone's buildings presents opportunities for reducing fuel use. Heating systems are being updated where possible and efforts are being made throughout the park to improve building envelopes.

*In 2017 renewable energy systems at the Lamar Buffalo Ranch became operational after continued efforts since 2014. A 2.3 KW hydro turbine was added to the 44 kW of solar power available to produce campus electricity. This energy is now stored in 208 refurbished Toyota Camry batteries which provide power to the ranch. Next steps will be to replace some of the batteries which are now below planned capacity.*

*For energy conservation efforts on historic buildings, NPS crews started work on the Buffalo Keeper's House at Lamar and Xanterra finished and received LEED Gold for, the renovation of the historic Haynes building in Mammoth.*

## Electricity - kWh

User	2003* (base year)	2015	2016	2017	Change from Base
NPS	7,951,100	9,363,294	10,413,767	12,538,774	57.7%
Xanterra	16,618,069	16,601,952	17,513,980	18,191,147	9.5%
Delaware North	2,198,855	1,684,830	1,639,899	1,161,183	-47.2%
YPSS	—	—	266,189	407,937	—
Medcor	—	—	70,100	123,335	—
<b>Totals</b>	<b>26,768,024</b>	<b>27,650,076</b>	<b>29,903,935</b>	<b>32,422,376</b>	

## Propane - gallons

User	2003* (base year)	2015	2016	2017	Change from Base
NPS	208,531	257,528	260,921	270,294	29.6%
Xanterra	352,601	495,724	575,211	703,907	99.6%
Delaware North	70,534	60,747	67,293	51,003	-27.7%
YPSS	—	—	5,504	8,558	—
Medcor	—	—	2,120	9,300	—
<b>Totals</b>	<b>631,666</b>	<b>813,999</b>	<b>911,049</b>	<b>1,043,062</b>	

## Fuel Oil - gallons

User	2003* (base year)	2015	2016	2017	Change from Base
NPS	135,000	112,830	105,378	119,757	-11.3%
Xanterra	569,316	389,962	432,332	330,005	-42.0%
Delaware North	—	—	0	0	—
YPSS	—	—	0	0	—
Medcor	—	—	1,560	1,380	—
<b>Totals</b>	<b>704,316</b>	<b>502,792</b>	<b>539,270</b>	<b>451,142</b>	

## Natural Gas - hundreds of cubic feet

User	2003 (base year)	2015	2016	2017	Change from Base
NPS - West	10,910	10,416	11,080	10,879	-0.28%

See appendix A for use by location.

\* Note that listed 2003 totals by company do not match those from the 2016 sustainability report. Data reporting continues to improve in accuracy and consistency, but for 2003 different sources show slightly different numbers. Data here reflects numbers that will be used going forward for consistency.

# Water

**Baseline Year, 2007 (NPS, Xanterra, DNC):**

271,213,835 gallons

**2017 Progress (NPS, Xanterra, DNC):**

299,039,394 gallons = **10.3% increase**



Yellowstone Lake Drainage

Climate change is already causing drier and warmer conditions in the Rocky Mountain West and it is important that Yellowstone minimizes human water use and ensures that facilities and operations have minimal impact on natural water resources.

Natural water systems are critical to the hydro-thermal features and ecological processes protected in Yellowstone. As we strive for efficient water use, it is also imperative that we assess future demand and the impacts of structures and pavements on natural surface water systems.

Currently, over 250 million gallons are used for hydrating, flushing, and washing each year. Yellowstone plans to reduce overall potable water consumption by using water-smart technology and design.

Park staff are installing more water meters for better reporting, replacing toilets and faucets with more efficient models, and repairing leaks in old water pipe infrastructure throughout the park. Smart controllers are now used to minimize irrigation water in Mammoth.

**In 2017** renovations of existing facilities, such as Uncle Tom’s Comfort Station at Canyon, include new low-flow flush toilets that meet WaterSense compliance at 1.28 gallons per flush. Just updating all the toilets in Yellowstone could save the park over 2 million gallons of water each year.

## Water Use - gallons

User	2007 (base year)	2015	2016	2017	Change from Base
NPS	158,337,935	143,167,022	152,277,550	163,515,310	3.3%
Xanterra	104,683,900	119,660,742	125,766,345	125,786,584	20.2%
Delaware North	8,192,000	7,829,200	8,382,000	9,737,500	18.9%
YPSS	—	1,448,860	1,513,006	1,547,066	—
Medcor	—	124,654	108,952	101,217	—
Other (NorthWestern Energy, Centurylink, USPS)	—	340,363	1,508,000	415,696	—
<b>Totals</b>	<b>271,213,835</b>	<b>272,570,841</b>	<b>289,555,853</b>	<b>301,103,373</b>	

# Fleet and Transportation

## Baseline Year, 2003 (NPS, Xanterra, DNC):

333,401 gallons gasoline

171,834 gallons diesel

## 2017 Progress (NPS, Xanterra, DNC):

308,629 gallons = 7.4% decrease in gasoline

258,559 gallons = 50.5% increase in diesel



NPS Chevy Volt at Charging Station

Yellowstone’s NPS fleet alone has over 500 vehicles for various purposes from commuting to plowing snow to moving earth. Policy states that the NPS will not increase the number of vehicles in its fleet. Managers continue to look for opportunities to be more fuel efficient through vehicle technology and operation in order to reduce greenhouse gas emissions.

In 2017 additional Level 2 charging stations for public use were installed at Lake, Canyon and Old Faithful, adding to those in Gardiner and Mammoth. Yellowstone now has a network of charging opportunities for visitors driving electric and plug-in hybrid vehicles.

The NPS makes good use of its two plug-in hybrid vehicles and they show over 100 mpg. Staff hopes higher clearance plug-in hybrids will be available soon.

## Gasoline - gallons

User	2003* (base year)	2015	2016	2017	Change from Base
NPS	183,100	138,011	141,500	130,307	-28.8%
Xanterra	128,591	219,608	158,299	157,552	22.5%
Delaware North	21,710	24,923	26,582	20,770	-4.3%
YPSS	—	—	5,721	9,879	—
Medcor/USPS	—	—	1,600	1,270	—
<b>Totals</b>	<b>333,401</b>	<b>382,542</b>	<b>333,702</b>	<b>319,778</b>	

## Diesel - gallons

User	2003* (base year)	2015	2016	2017	Change from Base
NPS	132,600	151,951	167,200	188,106	41.9%
Xanterra	31,673	71,967	67,875	62,653	97.8%
Delaware North	7,561	7,500	9,898	7,800	3.2%
YPSS	—	—	8,582	4,233	—
Medcor/USPS	—	—	0	0	—
<b>Totals</b>	<b>171,834</b>	<b>231,418</b>	<b>253,555</b>	<b>262,792</b>	

\* Note that listed 2003 totals by company do not match those from the 2016 sustainability report. Data reporting continues to improve in accuracy and consistency, but for 2003 different sources show slightly different numbers. Data here reflects numbers that will be used going forward for consistency.

# Waste

**Baseline Year - Not**

**Applicable 2017 Progress:**

**2017 diversion rate = 60.2%**

Yellowstone National Park and its concession partners are striving to divert 75% of the solid waste produced in the park from landfills.

The YECC, Four Corners Recycling (Yellowstone’s recycling contractor), and the West Yellowstone Compost Facility aggregate each organization’s solid waste statistics to determine the total amount diverted in Yellowstone annually. In 2017 park employees, visitors, and partners diverted about 60% through recycling and composting initiatives.

**Results analysis:**

- ◇ 2017 shows an increase in compost generated. The compostables collection season was extended for hotels, restaurants and general stores.

In 2017 the NPS received maintenance and training from Worthington Industries for the propane canister crushing machine rebuilt for Yellowstone and the Greater Yellowstone Area. The park purchased two new collection cages for the program through the Greater Yellowstone Coordinating Committee (GYCC).

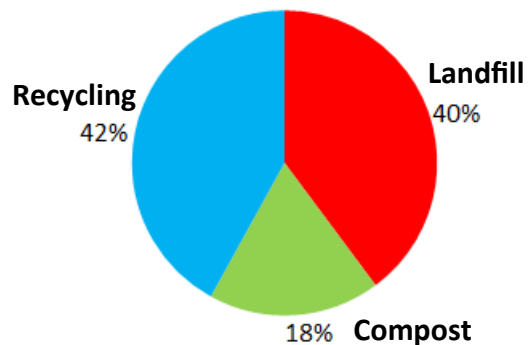
The season for collecting compost was extended to capture more of the hotel and store operations for the summer.



Propane Canister Recycling

In 2017 Xanterra installed a new electrolyzed water system to generate on site environmentally friendly, safe, cleaning and sanitizing products. This Patho-Sans system, which electrochemically activates water creating one solution to clean and one solution to sanitize, was installed in the Mammoth area and will completely eliminate the majority of chemicals used by Xanterra for cleaning.

## Waste Distribution 2017



Results (tons)	2012	2013	2014	2015	2016	2017
Recycling	1,335	1,510	1,988	1,891	1,705	1,580
Compost	785	694	458	388	331	685
Landfill	1,484	1,571	1,693	1,686	2,423	1,498
<b>Total (Trash, Compost, Recycling)</b>	<b>3,604</b>	<b>3,775</b>	<b>4,140</b>	<b>3,965</b>	<b>4,458</b>	<b>3,763</b>
Recycling %	37.0%	40.0%	48.0%	47.7%	38.2%	42.0%
Compost %	21.8%	18.4%	11.1%	9.8%	7.4%	18.2%
Landfill %	41.2%	41.6%	40.9%	42.5%	54.4%	39.8%
<b>Total Diversion Rate</b>	<b>58.8%</b>	<b>58.4%</b>	<b>59.1%</b>	<b>57.5%</b>	<b>45.7%</b>	<b>60.2%</b>



# 2017 Spotlight Projects

## Green Dining

Yellowstone General Stores' Green Restaurant Association Certification

## Green Housekeeping

Xanterra's "Our Softer Footprint"



*Yellowstone General Stores*

### Green Dining

In 2017 four general stores in Yellowstone (Old Faithful, Canyon, Fishing Bridge and Grant) became certified by the Green Restaurant Association (GRA).

To become a Level 1 Certified Green Restaurant each general store fountain implemented around 30 steps to reduce environmental impacts.

Highlights of green accomplishments include:

- ◇ Styrofoam-free environment
- ◇ Full scale recycling and composting program
- ◇ 100% compostable or reusable dinnerware
- ◇ Use of LED light bulbs
- ◇ Reduced waste by about 50% through recycling
- ◇ High efficiency pre-rinse spray valves, which help save energy and water

### Softer Footprint

In the winter of 2016/2017, Xanterra piloted an innovative new program to reduce the environmental impacts of a guest's overnight stay.

"Our Softer Footprint" Green Housekeeping Program gives guests who are staying two or more nights the option of completely forgoing housekeeping service during their stay including room cleaning, and towel and linen changes.

This program includes a \$5 per night incentive for guests who choose to participate. The program has the park-wide potential to save 300,000 gallons of water, 150,000 kWh of electricity, and 10,000 gallons of propane annually.

# Appendix A: Use totals by location

## 2017 Water Use - gallons

Location	NPS	Xanterra	Delaware North	YPSS	Medcor	NWE, CenturyLink, USPS	Total
<i>Canyon</i>	23,856,800	18,111,000	2,207,000	300,000	0	0	44,474,800
<i>Gardiner</i>	269,800	5,844,880	0	68,831	0	0	6,183,511
<i>Grant Village</i>	7,324,000	14,898,400	1,073,000	271,000	0	45,600	23,612,000
<i>Lake + Fishing Bridge + Bridge Bay</i>	23,226,900	33,343,600	2,989,000	139,000	55,000	66,500	59,820,000
<i>Mammoth</i>	83,788,322	19,172,278	256,000	191,100	10,000	271,300	103,689,000
<i>Madison Junction</i>	2,008,591	2,475,991	0	0	0	0	4,484,582
<i>Norris</i>	2,922,770	0	0	0	0	0	2,922,770
<i>Old Faithful</i>	15,899,917	28,650,435	2,504,000	270,135	36,217	32,296	47,393,000
<i>Tower (Falls, Roosevelt)</i>	935,700	3,290,000	538,500	307,000	0	0	5,071,200
<i>West</i>	693,000	0	170,000	0	0	0	863,000
<i>Smaller Locations (CGs, etc.)</i>	2,589,510	-	0	0	0	0	2,589,510
<b>2017 Totals</b>	<b>163,515,310</b>	<b>125,786,584</b>	<b>9,737,500</b>	<b>1,547,066</b>	<b>101,217</b>	<b>415,696</b>	<b>301,103,373</b>

## 2017 Electricity Use - kWh

Location	NPS	Xanterra	Delaware North	YPSS	Medcor	Total
<i>Canyon</i>	1,675,197	2,744,530	258,882	104,594	0	4,783,203
<i>Gardiner</i>	525,140	2,437,008	0	80,608	0	3,042,756
<i>Grant Village</i>	788,969	1,724,763	115,101	28,729	0	2,657,562
<i>Lake + Fishing Bridge + Bridge Bay</i>	1,260,041	2,207,602	226,005	63,889	Unknown	3,757,537
<i>Mammoth</i>	4,357,768	2,387,050	101,800	26,257	Unknown	6,872,875
<i>Madison Junction</i>	720,808	0	0	0	0	720,808
<i>Norris</i>	397,428	0	0	0	0	397,428
<i>Old Faithful</i>	1,974,553	5,228,592	209,050	68,097	Unknown	7,480,292
<i>Tower (Falls, Roosevelt)</i>	249,121	305,391	59,512	35,763	0	649,787
<i>West</i>	335,379	0	189,207	0	0	524,586
<i>Smaller Locations (CGs, etc.)</i>	254,370	1,156,211	1,627	0	0	1,412,208
<b>2017 Totals</b>	<b>12,538,774</b>	<b>18,191,147</b>	<b>1,161,183</b>	<b>407,937</b>	<b>123,335</b>	<b>32,422,376</b>

## 2017 Fuel Oil - gallons

Location	NPS	Xanterra	Delaware North	YPSS	Medcor	Total
<i>Canyon</i>	6,976	0	0	0	0	6,976
<i>Gardiner</i>	0	0	0	0	0	0
<i>Grant Village</i>	1,610	0	0	0	0	1,610
<i>Lake + Fishing Bridge + Bridge Bay</i>	1,394	21,690	0	0	1,380	24,464
<i>Mammoth</i>	106,804	117,975	0	0	0	224,779
<i>Madison Junction</i>	384	0	0	0	0	384
<i>Norris</i>	0	0	0	0	0	0
<i>Old Faithful</i>	2,361	189,175	0	0	0	191,536
<i>Tower (Falls, Roosevelt)</i>	0	0	0	0	0	0
<i>West</i>	0	0	0	0	0	0
<i>Smaller Locs (CGs, etc.)</i>	228	1,165	0	0	0	1,393
<b>2017 Totals</b>	<b>119,757</b>	<b>330,005</b>	<b>0</b>	<b>0</b>	<b>1,380</b>	<b>451,142</b>

## 2017 Propane - gallons

Location	NPS	Xanterra	Delaware North	YPSS	Medcor	Total
<i>Canyon</i>	29,709	147,829	10,322	2,193	0	190,053
<i>Gardiner</i>	13,607	211,851	0	2,989	0	228,447
<i>Grant Village</i>	16,893	33,171	3,474	0	0	53,538
<i>Lake + Fishing Bridge + Bridge Bay</i>	35,359	112,715	14,296	1,803	Unknown	164,173
<i>Mammoth</i>	90,659	28,874	2,366	0	Unknown	121,899
<i>Madison Junction</i>	10,150	0	0	0	0	10,150
<i>Norris</i>	2,755	0	0	0	0	2,755
<i>Old Faithful</i>	27,480	117,713	4,894	1,573	Unknown	151,659
<i>Tower (Falls, Roosevelt)</i>	6,838	19,611	2,879	0	0	29,327
<i>West</i>	6,958	0	11,321	0	0	18,280
<i>Smaller Locs (CGs, etc.)</i>	29,887	32,144	1,451	0	0	63,482
<b>2017 Totals</b>	<b>270,294</b>	<b>703,907</b>	<b>51,003</b>	<b>8,558</b>	<b>9,300</b>	<b>1,043,062</b>

# Appendix B: 2017 Waste Program Details

Municipal Solid Waste	NPS	Xanterra	DNC	YPSS	Total (pounds)	Total (Tons)
<i>Solid Waste from Dumpsters</i>	4,002,558				4,002,558	2,001.28
<i>Other Solid Waste</i>			363,970		363,970	181.99
<b>Total Solid Waste</b>					<b>4,366,528</b>	<b>2,183</b>
<b>Demolition/Renovation/Construction</b>						
<i>Class III - light construction waste</i>	23,220				23,220	11.61
<i>Class IV - heavy construction waste</i>	392,680				392,680	196.34
<i>Other</i>	368,480				368,480	184.24
<b>Total Construction Wastes</b>	<b>784,380</b>	<b>Not reported</b>	<b>Not reported</b>	<b>Not reported</b>	<b>784,380</b>	<b>392</b>
<b>Municipal Recycling</b>						
<i>Aluminum/Tin/Mixed Cans</i>	18,400	43,960	1,582		63,942	31.97
<i>Cardboard</i>	131,880	380,395	173,950		686,225	343.11
<i>Glass</i>	99,100	198,250	12,910		310,260	155.13
<i>Paper (Office, Newspaper, Slick)</i>	34,132	42,295	15,132		91,559	45.78
<i>Plastics, #1 &amp; #2</i>	38,090	61,930	15,020		115,040	57.52
<i>Propane/ Iso Butane Canisters</i>		NPS	36		36	0.02
<i>Bear Spray Canisters</i>		NPS				
<i>Single Stream Recycling</i>			33,546		33,546	16.77
<b>Operations Recycling</b>						
<i>Antifreeze</i>	1,852	4,092		370	6,314	3.16
<i>Batteries</i>	9,150	6,772	550	175	16,647	8.32
<i>Cooking Grease</i>		28,522	3,360		31,882	15.94
<i>Electronics (incl. CD/DVD/Floppies)</i>	3,342	2,060	59	750	6,211	3.11
<i>Expired Medical Supplies</i>	117				117	0.06
<i>Grasscycling</i>	64,000				64,000	32.00
<i>Lamps - Crushed Fluorescent Lights</i>	600	1,451	468	80	2,599	1.30
<i>Linens and Textiles</i>		45,470	1442		46,912	23.46
<i>Mattresses</i>		14,910			14,910	7.46
<i>Manure to West</i>	72,000	430,000			502,000	251.00
<i>Oil Filters</i>		750		5,412	6,162	3.08
<i>Oil Used</i>	56,980	20,400	12,475	11,594	101,449	50.72
<i>Other: Xanterra's lost and found, chairs, etc.</i>		516,001			516,001	258.00
<i>Packaging for Retail Shipments Xanterra</i>		27,755			27755	13.88
<i>Printer/Toner &amp; Ink Cartridges</i>	328	149	21	4	502	0.25
<i>Steel/Scrap Iron</i>	140,665	31,160	6,120	20,000	197,945	98.97
<i>Tires</i>	30,000	150,000		10,600	190,600	95.30
<i>Wood Chips/Wood Pallets/Slash</i>	3,940	86,470	36,797		127,207	63.60
<b>Total Municipal/Operations Recycling</b>	<b>704,576</b>	<b>2,092,792</b>	<b>313,468</b>	<b>48,985</b>	<b>3,159,821</b>	<b>1,580</b>