

# THE GREENSTONE

SUSTAINABILITY REPORT 2012 YELLOWSTONE NATIONAL PARK



# Sustainability - The Way Forward

Sustainability is critical to the park's future preservation. The impacts of our decisions and operations in Yellowstone and our efforts to reduce energy, water and waste are directly and indirectly tied to protecting the park and natural resources beyond our boundaries. Many of our practices have followed these principles for a long time while others demand new thinking.

As we prepare this report it is winter in Yellowstone. The summer of 2012 was hot and dry and winter has been slow in coming with snow often turning to rain. The mountains are white now, but the snowpack is thin. Climate change is evident, and as stewards of Yellowstone we are aware of the effects, and are passionate about doing all we can to mitigate them. The familiar question is how do we manage for natural resource and wildlife adaptation to changing conditions? Managers recognize the importance of comprehensive ideas, working beyond boundaries and collaborating to create specific strategies and actions that protect and restore wildlife populations and the habitats and natural resources on which they depend. But let's not forget the other side of the challenge; actions to mitigate the effects of climate change are both urgent and essential. Tied with entrenched manufacturing, tooling, existing infrastructure, fiscal processes and economics the simplest changes can seem out of reach. Like wildlife management, planning for future change to park infrastructure and facility operations requires a comprehensive approach, but also demands commitment by each of us – we are the biggest hurdle to successful sustainability. To be stewards of Yellowstone's environment we recognize that we are part of it and that our actions do make a difference, locally, regionally and globally.

Yellowstone strives to make sustainability an essential element in management and operational decisions. In 2012, we completed our Strategic Plan for Sustainability by setting goals and objectives based on Executive Orders for the federal government and with direction from the National Park Service. As targets are set and projects implemented the plan will serve as a guide and a tool to track progress. Accomplishments in all categories have been realized and although these may seem small and incidental compared to the enormity of reaching goals, the fact that staff throughout the park are working to carry out projects based on greener values is progress unto itself. Thanks to each of us, the park's sustainability program continues to become the way we do business.



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# I N T R O D U C T I O N

In order to learn from challenges and continuously improve it is important to track progress and share results. The Greenstone is Yellowstone's Annual Sustainability Report; it presents achievements for the past year, in this case 2012, for sustainable operations in Yellowstone.

The categories, and goals and objectives are referenced from Yellowstone's Strategic Plan for Sustainability. The listed targets are those projects or actions carried out in the last year which contribute toward the goals. Only objectives from the Strategic Plan which have a 2012 target completed are listed.

The complete Strategic Plan for Sustainability can be found on Yellowstone's website: <http://www.nps.gov/yell/parkmgmt/sustainability-contents.htm>

NPS staff works closely with our concessioners and non-profit partners through the Yellowstone Environmental Coordinating Committee (YECC) to ensure a comprehensive approach to sustainability. This report focuses on NPS accomplishments and presents a summary of concession accomplishments including results of collaborative solid waste diversion efforts. More in depth reporting on sustainable practices by concessioners can be found in their own documents and on their websites.

Yellowstone Environmental Coordinating Committee (YECC)

- Yellowstone Green Team - National Park Service
- GreenPath - Delaware North Companies Parks and Resorts
- Medcor
- Ecologix - Xanterra Parks and Resorts
- Yellowstone Association
- Yellowstone Park Foundation
- Yellowstone Park Service Stations

# EXECUTIVE SUMMARY

Though hard to quantify 2012 seems to have brought an increased interest and involvement in sustainability from staff throughout the park. Whether spurred by efforts to share information, the increase in urgency presented by outside sources, or the knock-on effect of staff commitment, there has been a gradual but steady increase in park efforts with many staff taking their own initiative to be greener.

2012 saw the completion of Yellowstone's Strategic Plan for Sustainability. The plan was initiated in 2011 with help from concessioners and partners and underwent continued refinement through the spring and summer of 2012 before its release. It provides direction and sets goals for sustainability and will be reviewed annually.

Energy use reduction is the most difficult and monumental task that faces Yellowstone with an overwhelming amount of work to be done. Starting at the beginning, 2012 saw the development of an Energy Monitoring database for NPS facilities to help us better understand how we measure energy and where we need to improve in order to record reduction. Many building improvement projects were undertaken, most relatively simple and cost effective with an emphasis on long term energy reduction including lighting retrofits, window replacements and insulation upgrades. Before the year came to an end we started producing approximately 175 kW of electricity an hour with a micro-hydro plant in Mammoth Hot Springs.

Water use reduction was given a good kick-start too with the installation of smart controllers for the irrigation system in Mammoth. Water fixtures are being replaced throughout the park with the latest in water efficiency.

With a successful solid waste and recycling program, in 2012 staff focused on calculating accurate measurements for all recycled commodities, composting and landfill quantities. NPS staff, partners and concessioners found ways to implement further efficiencies and recycle less obvious items. Standards for buying greener have been set by our concession partners and have seen slower progress with the NPS and its difficult procurement practices. But in 2012 we took on this challenge with increased interest by many staff and an ongoing effort to provide greener products in the Mammoth Supply Center.

Our fleet fossil fuel reductions saw some successes with more fuel efficient vehicles but some setbacks with the loss of bio-deisel.

Overall Yellowstone is confident that we are gaining momentum. More support from the service with regional collaboration and funding opportunities as well as great examples set by our concession partners have encouraged us further and we hope that 2013 will bring a continuation of measurable success in sustainability.





# LEADERSHIP

*...Committed to lead and encourage sustainable efforts in Yellowstone National Park, and establish a structure and process for sustainability that is collaborative and broad reaching.*

The following goals and objectives are established in Yellowstone’s Strategic Plan for Sustainability, the targets are projects that will help us achieve these goals.

## GOAL

Guide Yellowstone in exemplary environmental stewardship, striving to reduce human impacts on the environment.

### OBJECTIVE

Foster collaborative initiatives for Yellowstone that involve the NPS, park concessioners, surrounding government agencies and communities. Empower the Yellowstone Environmental Coordinating Committee to foster collaborative, sustainable initiatives for NPS and concessioner operations in Yellowstone.

Commission an annual sustainability audit and review recommended measures.

### TARGET

- Park Management has encouraged collaboration of NPS and concessioner sustainable actions and reporting and is in full support of the YECCs 2012 initiative to reduce single use plastics.
- Commitment to Yellowstone’s Strategic Plan for Sustainability, released 2012.
- Yellowstone has developed its first annual report for 2012 – The Greenstone.
- In 2012 Yellowstone’s NPS operations underwent an Environmental Audit. Recommendations from this audit are being reviewed in 2013.
- Delaware North Companies was awarded the Montana state EcoStar award for pollution prevention efforts.
- Xanterra won NPS environmental achievement award and DOI environmental achievement award for Mammoth Hotel.

## GOAL

Live out a culture empowering employees to contribute to a unified vision for the “Greening of Yellowstone”.

### OBJECTIVE

Identify key champions in environmental stewardship, define roles and responsibilities and provide support for them to educate others and carry out sustainability initiatives.

### TARGET

- Xanterra’s sustainability coordinator became LEED AP.



# EDUCATION AND COMMUNICATION

*...Providing sustainability information and educational materials to the employees and visitors of Yellowstone National Park and promoting behavior change among the workforce.*

The following goals and objectives are established in Yellowstone’s Strategic Plan for Sustainability, the targets are projects that will help us achieve these goals.

## GOAL

Engage stakeholders in Yellowstone’s sustainability journey.

### OBJECTIVE

Develop an annual progress report on sustainable actions allowing park staff and partners to learn from both successes and challenges.

Regularly communicate sustainability initiatives, ideas and issues using a variety of methods to reach a wide audience wide audience.

### TARGET

- Prepared and distributed annual report - The Greenstone.
- All concession partners improved education for staff through consistent messaging, providing better signing and information sharing, and making an effort to train employees on sustainable practices and policies.

## GOAL

Tell a compelling story that powerfully communicates our vision and goals and inspires sustainability efforts within and beyond Yellowstone.

### OBJECTIVE

Identify key messages for sustainability and environmental stewardship.

Engage the general public and publicize progress and successes on sustainable actions. Highlight success stories and lessons learned.

### TARGET

- Key messages were included in Yellowstone’s Strategic Plan for Sustainability.
- Developed webpages for the sustainability program.
- Prepared and distributed project reports and sustainability accomplishments to employees and visitors.



# ENERGY

...Reducing energy in Yellowstone and sharing best practices for energy conservation.

The following goals and objectives are established in Yellowstone's Strategic Plan for Sustainability, the targets are projects that will help us achieve these goals.

## GOAL

Impress upon park employees and visitors best practices for energy conservation to inspire them to conserve energy in Yellowstone and at home.

### OBJECTIVE

Reduce the park's energy consumption from a 2003 baseline.

Develop and implement an energy monitoring plan to track and report energy use.

Prioritize and implement retrofits and updates to energy inefficient systems such as generators, boilers, indoor and outdoor lighting, appliances and equipment.

Increase the use of energy from sources that are renewable and sustainable.

### TARGET

- The Yellowstone Association renovated Lamar cabins improving building envelope.
- Medcor carried out energy audit on Mammoth clinic.

- NPS created an energy monitoring plan, identifying monitoring of electricity for specific buildings.

- NPS replaced inefficient lights in district shop buildings and installed first LED parking area lights in Mammoth.

- Many indoor lights were replaced in general stores and hotels.

- NPS started micro hydro plant in Mammoth averaging 175KW an hour.
- DN installed solar thermal unit on Grant Village Dormitory.

## GOAL

Set a high standard in energy performance improvements and meet or exceed NPS goals for energy management.

### OBJECTIVE

Impress upon park employees and visitors best practices for energy conservation to inspire them to conserve energy in Yellowstone and at home.

### TARGET

- Shared Ehint on easy energy reduction methods.



# WATER

*... committed to reducing Yellowstone's use of potable water by inspiring behaviors to conserve water, using water-smart technology, and integrating design changes that minimize impacts of park structures on natural water systems.*

The following goals and objectives are established in Yellowstone's Strategic Plan for Sustainability, the targets are projects that will help us achieve these goals.

## GOAL

Protect watersheds and preserve natural hydrological and geothermal systems.

### OBJECTIVE

Develop a water source management plan to identify vulnerabilities and recommend mitigation for impacts to Yellowstone's natural hydrological and geothermal systems.

### TARGET

- Prepared a water balance study for Old Faithful.

## GOAL

Decrease potable water use in Yellowstone.

### OBJECTIVE

Establish a water metering plan to measure water consumption, establish baseline water use and measure effects of water conservation strategies.

Develop a comprehensive program for landscape irrigation to minimize water use.

Conduct water infrastructure assessments and identify water loss.

Implement strategies and technologies to reduce potable water for facilities, operations and residences.

### TARGET

- Mapped water meters and identified monitoring needs for high use buildings 5,000 sq ft.
- Installed new controllers for Mammoth irrigation.
- Detected and fixed leaks in old water lines.
- Upgraded to more water efficient fixtures.

## GOAL

Set a high standard in energy performance improvements and meet or exceed NPS goals for energy management.

### OBJECTIVE

Share water conservation strategies and communicate water reduction projects and programs in Yellowstone with employees and visitors.

### TARGET

- Published eHint about efficient irrigation practices.
- Gave a "green-bag lunch" presentation about the Mammoth Hot Springs irrigation project.



*..Reducing fossil fuel use in Yellowstone's fleet.*

# FLEET AND TRANSPORTATION

The following goals and objectives are established in Yellowstone's Strategic Plan for Sustainability; the targets are projects that will help us achieve these goals.

## GOAL

Minimize environmental impacts from operational vehicle use.

### OBJECTIVE

Ensure best fuel efficiency technologies are used for all fleet improvements and upgrades, including watercraft and over-snow vehicles.

Provide opportunities and incentives for fuel-efficient travel to work and travel at work practices.

### TARGET

- YNP received a small electric maintenance vehicle and two ford escape hybrids for its fleet through a DOE grant and partnership with Clean Cities.
- A new bus was purchased through a DOE grant for the Livingston to Mammoth staff commuter route.

## GOAL

Minimize environmental impacts from visitor transportation:

### OBJECTIVE

Implement where feasible, shuttles and transit systems to popular destinations throughout Yellowstone, surrounding communities and local airports.

### TARGET

- YA improved scheduling to consolidate trips and focuses on smaller vehicles.



# ENVIRONMENTAL PURCHASING AND WASTE REDUCTION

*...Providing opportunities for employees and visitors in Yellowstone National Park to reduce solid waste.*

The following goals and objectives are established in Yellowstone’s Strategic Plan for Sustainability, the targets are projects that will help us achieve these goals.

## GOAL

Purchase environmentally friendly products and minimize the lifecycle impacts of purchased materials.

### OBJECTIVE

Purchase commodities with little packaging, recyclable or biodegradable materials, non-toxic components and low embodied energy from manufacturing and transportation.

### TARGET

- YNP introduced 100% post-consumer recycled office paper.
- Concessions implemented bulk packaging and increased local purchases to reduce waste - including the famous bear soap, now made in the USA!

## GOAL

Ensure the most sustainable use of waste products. Minimize potential pollution threats to the environment and human health.

### OBJECTIVE

Divert solid waste from landfills.

### TARGET

- Medcor switches to digital x-rays reducing toxic chemicals and materials.
- Back-haul system implemented at General Stores.
- Xanterra donated 60,000 mattresses and 30,000 linens to charities
- Water bottle filling stations installed in General Stores help to reduce single use plastic bottles.
- Xanterra tried out a three bin pilot for waste collection.
- Medcor continues drug take-back program.
- Annual tracking of parkwide waste diversion. Discussions on how to do better in 2013.

Monitor/track diversion rates for recycling efforts.

Implement standards and strategies for recycling and reusing construction and demolition waste to divert building and infrastructure materials from landfills.

- Building renovations were greener using products and recycling more construction waste.

## GOAL

Educate employees and visitors on the importance of purchasing and waste reduction to inspire them to buy green and reduce waste in Yellowstone and at home.

### OBJECTIVE

Educate staff on standards and policies for environmental purchasing and waste reduction.

### TARGET

- Developed and implemented “Buy Green” training.
- Worked with staff to understand challenges and promote opportunities for purchasing greener products.



# NPS/CONCESSION REPORTS

- LEADERSHIP
  - EDUCATION/  
COMMUNICATION
  - ENERGY
  - WATER
  - FLEET/  
TRANSPORTATION
  - ENVIRONMENTAL  
PURCHASING AND WASTE  
REDUCTION
- 



# NPS REPORTS

2012



## Yellowstone's Vision for Sustainability webpages:

Park managers and concession partners support and endorse "Yellowstone's Vision for Sustainability". First drafted with help from concession and corporate partners, this Strategic Plan is considered a working document and will be reviewed annually to provide the best direction for sustainability in Yellowstone.

<http://www.nps.gov/yell/parkmgmt/sustainability-contents.htm>



Yellowstone staff visit the recycling facility and learn about how recycled items are sorted and separated.



## The Greenstone:

This 2012 Greenstone is our first effort to report sustainability actions completed for the previous year. It is intended as a tool for tracking as well as a mechanism for sharing information and inspiring new initiatives. We encourage input on how we can continue to improve and present clear and interesting information.



## NPS Environmental Management Evaluation:

Major concessions operating in Yellowstone are required to undertake an Environmental Management Evaluation every 3 years. This evaluation includes environmental compliance and sustainability. The 2012 audit for NPS facilities and operations was carried out by a third party organization under contract; PRIZM, and reported successes and recommendations for improvement. Suggestions for improving the sustainability side of the program focused on defining roles and responsibilities which staff felt was a fair assessment particularly as there were key changes in 2012.



# CONCESSION REPORTS

2012



## Delaware North Companies:

Delaware North operates Yellowstone's General

Stores. Its GreenPath program focuses on reducing environmental impacts in Yellowstone. Yellowstone General Stores have been successfully registered to ISO 14001 standards since 2003.

In 2012 DNC was awarded the Montana State EcoStar Award for pollution prevention efforts for the fifth consecutive year.

Yellowstone General Stores successfully passed a five year CoEMP environmental audit conducted by the National Park Service with zero nonconformances and was also the first property of Delaware North to be externally audited for ISO 14001 in 2012.



## Xanterra:

Xanterra operates Yellowstone's hotels, lodges and large campgrounds. Its Ecologix program focuses on reducing environmental impacts in Yellowstone.

In 2012, Xanterra won both a National Park Service Environmental Achievement Award and a Department of the Interior Environmental Achievement Award for the Mammoth Hotel Dining Room Green Restaurant Association Certification. The Mammoth Dining Room is Xanterra's first certified green restaurant and is the first 3-Star certified restaurant in Wyoming, and one of only 71 in the country. To achieve its 3-Star Green Restaurant certification, the Mammoth Hotel Dining Room installed waterless urinals, dual-flush toilets, and super energy efficient LED lamps, and sources of local, organic, and sustainable cuisine, including Marine Stewardship Council certified salmon.

Xanterra has continued to work with local and national partners to improve awareness of environmental issues in the Greater Yellowstone Ecosystem. During 2012, Xanterra sustainability staff met with groups from Montana State University, the University of Montana, Teton Science School, and Discovery Student Adventures (among many others) to promote the actions Xanterra is taking to help maintain the environmental integrity of Yellowstone. Additionally, Xanterra has remained active in its partnerships with the Yellowstone Business Partnership's Uncommon Sense program to promote business sustainability, and continues to serve on the Board of Directors of the Yellowstone-Teton Clean Energy Coalition.



# CONCESSION REPORTS

2012



## Medcor:

Medcor operates Yellowstone's three clinics at Old Faithful, Lake and Mammoth Hot Springs.

In 2012 Medcor has improved and grown its sustainability program, while maintaining quality medical care for both visitors and employees. Medcor has concentrated efforts on energy efficiencies for its buildings and waste reduction through education and behavioral change encouraging employees to separate waste and recycle.



## Yellowstone Park Service Stations (YPSS):

Yellowstone Park Service Stations provide fuel for visitors traveling within the park and emergency towing services.

YPSS participates in all efforts related to Yellowstone's Sustainability Program and contributes fully to the municipal waste recycling program.

YPSS has taken the initiative to design a new bear proof recycle and trash bin currently being tested at West Yellowstone's Grizzly Bear Recovery Center. If the bin passes tests YPSS plans to build trash bins in 2013-14 and install them in the spring of 2014.



## The Yellowstone Association:

Since 1933, the Yellowstone Association (YA) has served as Yellowstone National Park's official partner in education. In all aspects of business and partnership, YA strives to inspire, educate, and preserve the natural wonder that is Yellowstone National Park. These themes are integral as YA works with partner organizations to provide a healthier and more sustainable ecosystem.

In 2012 YA made significant strides in all three major areas of involvement, operations and education including sustainable building practices and is committed to minimizing our impact in every way possible.



# EDUCATION AND COMMUNICATION

## NPS REPORTS

2012



### Sharing Information:

The Green Team continues to improve the quality and consistency of information shared on sustainability topics. Some examples for 2012:

- Eight eHints were published throughout 2012 with a reach of approximately 800 NPS employees in the summer months (June – September), and 400 in the off season (November – May).
- Meeting minutes and updates were published in the squad notes and in YNP@Work.
- Members of the team visited interior locations throughout the summer months meeting with district employees to identify challenges and project needs.
- Presentations outlining Yellowstone’s Sustainability Program were given at spring NPS seasonal orientations and YCC working youth groups.
- Two posters focusing on actions for climate change mitigation and irrigation reductions in Mammoth were presented at the Biennial Scientific Conference for the Greater Yellowstone Ecosystem.
- Presentations and talks were given to several universities, Teton Science School, and WorldMontana: Center for Diplomacy and Leadership.
- Green Team members represent Yellowstone on the Greater Yellowstone Coordinating Committee Sustainable Operations Subgroup and the NPS Intermountain Region Green Team.
- Work on Mammoth’s irrigation system was presented at a “green-bag lunch,” with questions and input from park staff. Recommendations were provided for efficient irrigation for yards in Mammoth in our April e-Hint.



Yellowstone’s Vision for Sustainability including goals and objectives can be found on the park’s website.



## ...A GREEN STORY 2012



### Sharing with Youth Programs:

The Yellowstone Conservation Corps (YCC) program is taking a leadership role in sustainability education. For many of the youth who join the program, this Yellowstone work experience is their first exposure to even very basic sustainability like recycling. Staff makes sure the recycling bins are very obvious from day 1. In a communal living situation like YCC, there is a great opportunity to discuss sustainability on many levels including visiting the compost facility and having the Green Team talk to the group about Yellowstone's sustainability projects.

Through the Education Curriculum, time is taken to discuss the student's individual impact on the earth and ways to decrease their footprint. Leave No Trace ethics are adhered to in all camping situations. Turning out lights is a big one. If lights are left on in one of the bathrooms in the dorm, then all the male or female enrollees have to do 10 pushups! It gets them to think and notice things and empowers them to take action. Most of the YCC vehicles take E-85 so there is also an opportunity to discuss alternative fuel types when fueling the vehicles.

Thanks to Bob Fuhrmann and YCC staff for dedication to making sustainability fun, inspiring and a way of life through Yellowstone's youth programs.



Yellowstone's Green Team presents a poster at the bi-annual science conference focusing on the importance of climate change mitigation, particularly fossil fuel reduction.



# CONCESSION REPORTS

2012



## Delaware North Companies (DNC):

The “Geyser Gazette” (an internal newsletter) was published on a monthly basis during the operating season of Yellowstone General Stores. Topics focused on GreenPath, Guestpath, park happenings, games, and DNC news.

Table top tent cards with interpretive information about the use and purpose of eco products is communicated to guests. Associates are trained about the use of these materials.

The “Pathways” Program serves as an incubator for local businesses to bring their products into the stores. Seventeen artists combined for a total of 152 events in 2012.

Vendors were encouraged through the Vendor Compliance Manual and the contractor packet to be more responsible especially with packaging to reduce, reuse, or eliminate and to share knowledge about environmentally friendly products.

The Environmental Manager and safety intern trained approximately 650 Yellowstone General Stores associates about GreenPath.

A letter was sent to all vendors describing DNC Environmental Management System - GreenPath, and inviting vendors to participate in achieving GreenPath goals reducing the human impact operations have on resources and the environment. At a minimum, vendors are required to comply with all relevant environmental laws and regulations.

Interpretive signs were installed at all store locations that describe the historic building, what can be found inside, and additional interpretation about the local area.

The Environmental Manager shared a weekly “GreenPath Tip” with all associates.

GreenPath messaging was improved in 2012 with Green Shelf Talkers that point guests to products such as local, organic, environmentally preferred and recycled content.



# CONCESSION REPORTS

2012



## Xanterra:

**Earth Day** - To celebrate Earth Day 2012, Xanterra worked with partners from the Yellowstone Environmental Coordinating Committee to hold a community electronics recycling event and screening on the bottled water documentary, Tapped!, in Gardiner. This event was able to divert over 1,000 pounds of recyclable electronics waste from entering the landfill.

**SustainaBits** - In 2011, Xanterra launched SustainaBits, a weekly dispatch highlighting environmental programs, information, and opportunities that is distributed to all employees. This program has continued for the entirety of 2012 and has become an institutionalized program and educational tool. SustainaBits topics range from sustainable cuisine menu items, environmental volunteer opportunities, and updated information on park-wide sustainability programs. To date, over 65 unique dispatches on a range of topics have been sent to employees.

**Employee Training** - Xanterra has an annual goal of 100% employee awareness of the Environmental Management System, Ecologix, and each employee that comes to work in Yellowstone receives basic Ecologix training at the start of their season. In addition, a concerted effort has been made to expand the amount of in-person training that is delivered directly from the Director of Sustainability. In 2012, by focusing on major arrival dates, this in-person Ecologix training was delivered to over 1,000 new and returning Xanterra employees. This attention to the importance of training helps ensure that all employees are recognizing their individual responsibilities in promoting and improving our environmental efforts.

**Student Intern** - For twelve weeks in the summer of 2012, the Xanterra Sustainability Department hired an intern to serve as a "Sustainability Specialist." This position was critical in helping to advance a number of sustainability programs, update records and documentation, improve employee and guest messaging, and develop new initiatives.



## The Yellowstone Association (YA)

With education as the prime focus, YA continues to work with staff and participants to better understand, communicate and minimize human impact to natural systems within the park and its surrounding communities. YA recognizes that it is important to share progress with program participants, the YA Board, staff and volunteers as well as with partner organizations.



### Mammoth micro-hydro:

The Mammoth micro hydro project will harness energy from the water that flows from the Indian Creek water intake on Swan Lake Flats to the storage reservoir at Mammoth's water treatment plant through an existing 12 inch pipe. The elevation change (head) is approximately 450 feet and the volume/flow of water is approximately 4 cubic feet per second. At the inlet to the reservoir a small building houses the generator, electrical equipment and the new turbine through which the water now flows.

One hundred and ten years after the U.S. Calvary installed a turbine in lower Mammoth to provide electricity for Fort Yellowstone, the park is generating electricity from water again. This time, instead of providing an independent power supply, the equipment will be directly synchronized with NorthWestern Energy's electric grid – the energy made will be energy the park doesn't have to buy. This is known as a grid tie induction generator; it is not designed to run independently and therefore cannot be used as a backup during a power outage. The advantages however are many: all the electricity generated is added to the overall supply rather than any extra not used being wasted, the generator is not affected by variable loads or overloads, nor are the electrical systems supplied by the generator affected if it isn't running smoothly or shuts down.

With the most efficient equipment available, Yellowstone hopes to generate 175 KW consistently. Though the turbine and generator are capable of 230KW the actual energy generated is dependent on the water supply: head, pressure and flow. Assuming the equipment will be running 90% of the time (all the time but allowing for some maintenance down time) this equates to 1,379,700 KWhours/year, a saving of approximately \$82,782/year in electricity costs!

This project was funded through the American (ARRA) Recovery and Reinvestment Act and cost \$1,100,000 to install. The project will pay for itself in 13 years. The micro-hydro unit is also saving 900 metric tons of greenhouse gas emissions every year.



Parking and egress areas at park headquarters are now lit with fully shielded, LED, lantern lights that minimize energy use and protect the dark night sky.



# NPS REPORTS

2012



## Lighting Replacement:

In 2012 park electricians updated indoor lighting in several maintenance shops improving work space conditions and reducing energy. The Old Faithful Emergency Services Building and water treatment plant, West Entrance Ranger Station and Northeast Entrance Ambulance/plow building have all had lights replaced with more efficient lower wattage lamps providing the same or better lighting conditions. 400watt metal halide lamps, which have temperamental startup, have been replaced with 150watt/T5 fluorescent lamps and the older 40 and 80watt/T12 fluorescent lamps with 28 and 56watt/T5 lamps respectively. These improvements have resulted in approximately 30% energy reduction for lighting in these buildings.

Grant Village replaced lamps in seven street lights that were still burning inefficient 175watt mercury vapor lamps with 56watt LEDs. This simple fix will save the park approximately \$450/year in electricity.

Yellowstone continues to work toward making all outdoor lighting energy efficient and fully shielded in accordance with its Dark Sky Program. In late 2011 the first LED parking area lights were installed to provide a safer night time environment for staff and visitors at park headquarters in Mammoth Hot Springs. These were specifically selected to complement the historic character and time period of Fort Yellowstone buildings. Seven post top lantern style fixtures with 35W, 3500K LED lamps provide a warm white light at a low lumen level creating a transition between the bright building lights and the dark beyond the parking area. Other outdoor lighting improvements for 2012 include the installation of two bollard lights for steps to building 70 in Mammoth, a staff residence building. These consist of small 3W LED lamp strips attached to rustic wooden bollards.



## Upgrading Utility Systems:

In 2012 four hot water heaters, some more than 30 years old, were replaced with “Energy Star rated” models that operate more efficiently.

Park utility systems are in constant need of maintenance and are responsible for large energy bills. Needed improvements offer opportunities to provide equipment that is more energy efficient. In 2012 plumbers installed energy efficient pumps in the Canyon campground sewage lift station to save energy and provide a much safer working environment.



# NPS REPORTS

2012



## Energy Monitoring Plan:

Energy use must be measured consistently to determine energy reduction. Extensive electrical and fuel supply systems were installed years ago in Yellowstone and modified over the years. Energy use for individual facilities has not been measured, meter readings may not relate to a specific building or one meter might serve multiple buildings. Many meters are not read consistently and/or provide minimal data because they are read just a few times a year.

The energy team together with staff responsible for energy billing and tracking worked on the first phase of the NPS energy monitoring plan by preparing a spreadsheet and corresponding mapping to record monitoring data – electric meters, propane meters and fuel tanks including which facilities they serve. The goal is to show if and how the energy for each facility is measured. The team has focused on administrative buildings, particularly high use buildings and those over 5,000 sq ft.

This data will allow tracking of facility performance, a better understanding of where energy monitoring needs to be improved, and set a baseline against which to measure energy reduction. The team has also entered other important energy information for each facility including age, size and energy systems information such as type of boilers. To provide a more comprehensive understanding of the energy performance of facilities and allow a comparison of energy intensity (Btus/sf). The information can be used for project proposals, funding requests and potential Energy Saving Performance Contracts (ESPC).

The National Park Service is now using Energy Star Portfolio Manager to track the energy use intensity of high use buildings. Buildings can be compared to an average model to determine if the building is energy efficient. This will help the park focus efforts for energy reduction where they are most needed.



# ...A GREEN STORY 2012



## Powering Park Facilities:

How much does it cost to provide power for NPS facilities in Yellowstone each year? Energy costs have been gradually increasing over the years and in 2011 the cost was over \$2,000,000 to purchase 10 million kilowatt hours of electricity and 400,000 gallons of propane and heating oil.

These numbers only include electric and propane for NPS operated buildings; concession buildings and housing that are billed direct from the energy companies (like lower Mammoth) are not included. The NPS maintains and operates 800 buildings in Yellowstone National Park totaling one million square feet! Many are old buildings needing energy improvements.

According to Energy Star calculations the Old Faithful Visitor Education Center has an Energy Use Intensity (EUI) of 103.8 kBtus/ft<sup>2</sup>. Though this seems huge it is better than most of the average EUIs for all building types listed in the Energy Star reference table.

| Description                                      | SF     | Use            | Year built | 2011 kWh | Electric \$ | Heating fuel (gal) | Fuel \$   | 2011 Total |
|--------------------------------------------------|--------|----------------|------------|----------|-------------|--------------------|-----------|------------|
| MA508-Vehicle Repair Garage, CC Camp             | 36,658 | shop           | 1986       | 282640   | \$29,678    | 56787              | \$108,790 | \$138,468  |
| OF1208-Old Faithful Education and Visitor Center | 26,000 | visitor center | 2010       | 271280   | \$41,448    | 19474              | \$36,538  | \$77,986   |
| MA36-Administration Building                     | 31,200 | admin          | 1909       | 292459   | \$27,341    | 14632              | \$46,784  | \$74,125   |
| NO1300-Heritage & Research Center                | 34,126 | admin          | 2005       | 661080   | \$42,917    | 7460               | \$14,333  | \$57,250   |
| MA38-Telecommunications Shop                     | 23,900 | admin          | 1909       | 339440   | \$30,249    | 14068              | \$26,868  | \$57,117   |
| CA822-Visitor Center                             | 26,446 | visitor center | 1958       | 79040    | \$11,852    | 11209              | \$40,187  | \$52,039   |
| OF830-Wastewater Treatment Plant                 | 12,534 | treatment      | 2001       | 293840   | \$44,060    | 1277               | \$2,853   | \$46,913   |



Yellowstone electricians change over 200, 20 year old 11watt incandescent holiday lights for 1watt LED lights on the tree in Mammoth Hot Springs.



# CONCESSION REPORTS

2012



## Delaware North Companies:

Energy conservation is a pivotal part of the GreenPath program at Yellowstone General Stores. Despite an increase in Park visitation, the 2012 season resulted in substantial reductions in energy use; electricity was reduced 14% and propane was reduced over 20%.

The Grant Dormitory Solar Thermal Project has contributed to the reduction of propane for this building. The majority of the savings are attributed to an increase in awareness along with the reduction in winter and off season construction work in 2012.

Energy savings initiatives included lighting retrofits at the Mammoth and Grant General Stores.

LED lights have been installed at the Mammoth General Store and at the Grant Store fountain area. This is expected to reduce energy use by up to 90%. Savings at Mammoth have averaged 1,100 kw/hr/month (\$103/month).

The General Stores also continue to use 20W compact fluorescent lamps to replace incandescents.

*Note: Canyon area electricity was substantially higher in 2011 probably due to a floor installation that occurred during the off season.*



# CONCESSION REPORTS

2012



## Xanterra:

In 2012, Xanterra completed a number of lighting improvement projects. Notable examples include a complete retrofit of the old incandescent lamps and fixtures in the Mammoth Hotel Map Room, Old Faithful Inn and Snow Lodge Retail retrofits (halogen to LED), walk-in refrigeration unit LED upgrades, and the removal of incandescent lighting in the Mammoth Terrace Grill. Additionally, Xanterra is continually upgrading outdated T-12 fluorescent lamps to more efficient T-8 lamps as they are identified.

Because on-site generation of renewable energy can be quite challenging within the boundaries of a National Park, Xanterra has included the purchase of Renewable Energy Credits (RECs) in their environmental portfolio. For 2012, Xanterra purchased 5,265,000 kilowatt hours (kWh) of wind power offsets from Renewable Choice Energy. This accounts for approximately 35% of our total electricity usage. RECs are intended to reduce the impacts from the use of electricity when on-site solutions may not be available. By purchasing RECs, Xanterra is taking responsibility for the environmental impact and raising awareness of the changes that are needed in the way their business operates and how we impact the world around us.



## Medcor:

Medcor recently undertook energy audits for Mammoth Clinic from both NorthWestern Energy and from the National Park Service with help from Georgia Tech Interns. The audits recommended energy reduction improvements such as lighting upgrades, insulation additions, and window replacements. Medcor hopes to implement these recommendations in coming years.



## The Yellowstone Association:

YA took every opportunity to improve building envelopes in 2012. Using local contractors to spray urethane foam insulation insures the best possible R-value in all renovations. The on-going log cabin renovations at the Lamar Buffalo Ranch resulted in significant energy reduction; the insulated and renovated cabins have more than quadrupled the R value and reduced energy use by over 50%. All the rustic log buildings at Lamar will receive the same treatment allowing a substantial reduction in energy footprint both in use and in delivery expense.

### Old Faithful Water Vulnerability Assessment:

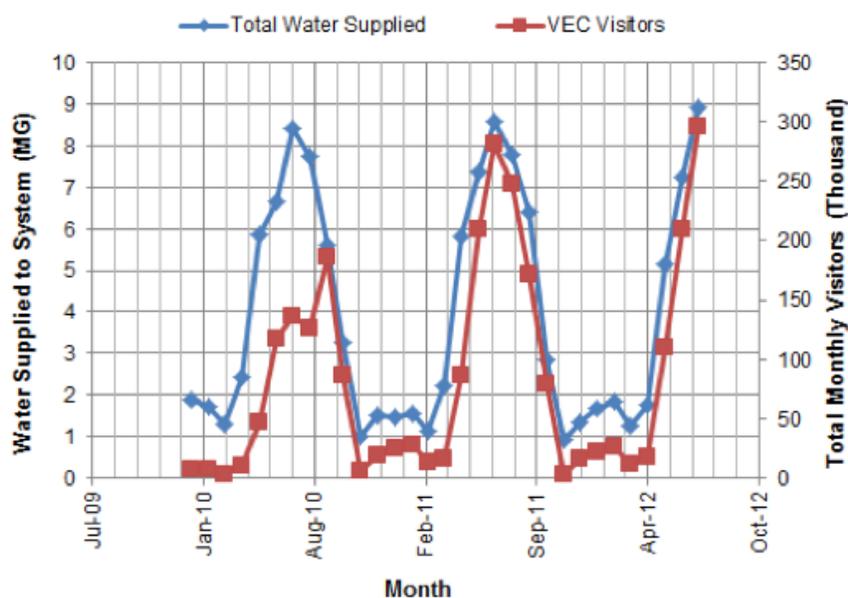
Before taking actions for water conservation it is important to understand supply and demand within the park and the effects that development has had on natural surface water systems. To this end the park coordinated a Water Vulnerability Assessment with Georgia Tech and Coca-Cola: During 2012, two executives from Coca-Cola worked with a Georgia Tech intern to produce a “Source Water Vulnerability” report for the Old Faithful Area. This report looks at the sustainability of water use in the Old Faithful Area. It includes analysis of the current water infrastructure’s ability to reliably provide water to visitors and employees as well as how infrastructure in the area diverts natural water flow.

This report will result in recommendations to park management about how to ensure sustainability of the water supply, how to minimize impacts to surface water, and which improvements are a priority. A final report will be completed in early 2013.



The Old Faithful water study has also involved inventorying the stormwater drainage system at Old Faithful. As a result, some non-functioning system components (like this one) have been found and documented.

**Monthly Water Production and Visitation**



As part of the Old Faithful water study, per-capita water use is being estimated using daily water production records and Visitor Education Center visitation numbers. This can then be used to predict how well the water treatment plant will be able to keep up with visitation growth in coming years.



# NPS REPORTS

2012



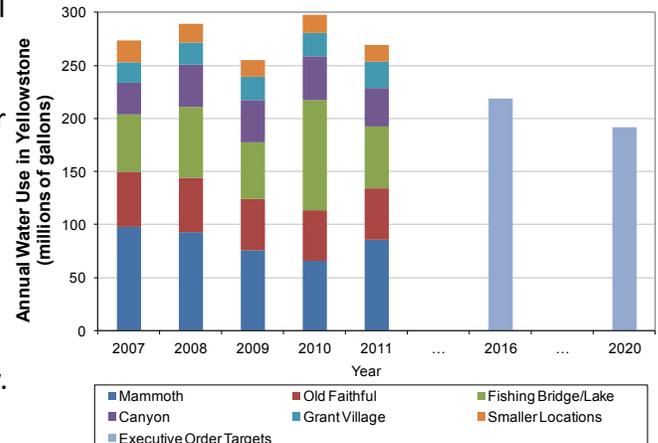
## Water Metering:

Understanding water use requires a good metering and tracking system, comparable to energy metering. To measure each facility's water use, the Green Team's Water Group worked with the Energy Group to start matching meters to facilities in the meter database. This process will continue in 2013."



## Conservation Goals:

By conducting evaluations like the Old Faithful Water Study, the Green Team's water group is looking at water management in Yellowstone in a comprehensive way. Understanding water infrastructure in the park, its capabilities, and its vulnerabilities can help the Green Team plan and prioritize water conservation measures that will work effectively with the park's water supply. Water use over the past five years, as well as target water use levels in 2016 and 2020, are shown in the graph below.



## Upgraded Plumbing Fixtures:

Plumbing fixtures are being replaced in park housing. Toilets and showerheads are being replaced with more water efficient fixtures and faucets receive water aerators that help reduce water use. In 2012 park plumbers replaced shower heads and toilets using 3-7 gallons/flush with those using 1.6 gallons/flush in seven residences (570, 80, 12A, 12B, 83, 700, 241 Tower).



## ...A GREEN STORY 2012

### **Wised up about Irrigation:**

Mammoth Hot Springs' irrigation controllers have all been upgraded to new "smart" controllers. The new controllers record irrigation activity, share weather data between controllers, and alert the operator to leaks in the lines as well as other problems. As controllers have been installed, irrigation zones have been analyzed and categorized into groups based on water needs (e.g., areas in the sun or areas with historic trees) so that watering can be tailored to each area. Flow monitoring by the controllers has already alerted the irrigation operator to a leak, allowing quick detection and repair.

Flow meter installation is still in progress. Once all flow meters are in place, controllers will be ready to irrigate based on daily weather data at the beginning of summer in 2013. The controller that already has a flow meter has been automatically adjusting irrigation to weather, reducing runtimes, and saving water while maintaining high grass quality. Even for controllers with flow meters still being installed, run times have been evaluated and reduced manually, and new water-saving irrigation strategies (like "cycle-and-soak") have been tried, providing more knowledge about those irrigation strategies most efficient for Mammoth soil and grass.

Full implementation of the system is expected to achieve around 30% reduction in water use for irrigation.



Staff works to set the smart controllers that will automatically regulate the amount of irrigation provided to lawns in upper Mammoth.



# CONCESSION REPORTS

2012



## Delaware North Companies:

Installing low flow fixtures is a required water conservation measure and DNC is using the best available when replacing fixtures such as showerheads, kitchen sprayers, toilets and waterless urinals.



## Xanterra:

Through a partnership with NPS and Kohler, Xanterra was able to upgrade the public restrooms in the Mammoth Hot Springs Hotel in 2012. This project incorporated top of the line fixtures from Kohler including .125 gallon/flush urinals, 1.28 gallon/flush toilets, and touchless faucets. In addition to these water-saving measures, the project incorporated recycled Paperstone partitions and energy efficient Dyson Airblade hand dryers.



## NPS REPORTS

2012



### Bio-Fuel Rates:

For many years Yellowstone has been proud to use a bio-diesel mix for all diesel vehicles in its fleet. Unfortunately 2012 has seen a set back with this initiative as bio-diesel is no longer being used due to its high price. The price of bio-diesel has made it an unreasonable commodity. Park managers are working with local partners and other government agencies in the Greater Yellowstone Area to look at potential solutions to greener fuel use.



### New Ride Share Bus:

Many of Yellowstone's NPS and concessioner staff who live in Livingston or Paradise Valley and work in Gardiner or Mammoth travel to work on an NPS commuter bus saving fuel and providing a safer service for travel before and after a long ten hour work day. The original bus, with many miles, was in need of replacement. The same DOE grant which provided the hybrid and electric vehicles also purchased a new bus with some hybrid capabilities.

Though the bus will provide a more energy efficient, cleaner vehicle it does have some problems. It cannot accommodate the full number of summer riders and some riders have said that the seats are not comfortable enough to relax on the journey. Also true hybrid buses do not presently exist. This vehicle saves fuel when starting and breaking which is ideal for a city setting but does not save a lot of fuel on a long journey with few stops.



### Hybrid/Electric Additions to Fleet:

The NPS in Yellowstone has a large fleet consisting of 787 vehicles. In recent years park managers have searched for ways to reduce the use of fossil fuel for Yellowstone's fleet including a preventative maintenance program. The park has received several hybrid vehicle donations in the past and in 2012 a Department of Energy grant enabled the purchase of two hybrid Ford escapes and a small electric work vehicle. The hybrids have joined the chief of maintenance fleet and the electric vehicle has been used in several different areas to date. It cannot travel between districts due to slow speed and limited battery charge but is very useful for short frequent journeys within one area.

West District maintenance staff has replaced three 3/4 ton pick-up trucks with three hybrid vehicles. This has resulted in a 28% fuel savings per vehicle annually.



# NPS REPORTS

2012



## Operational Efficiencies:

Due to the effectiveness of recycling in the park and replacement of small bins with larger dumpsters, two trucks have replaced five on the garbage route, with addition of a third truck during the peak season of July 4 - August 15. The garbage route has operated this way for the past two years and essentially eliminated use of the Mammoth and Lake Transfer Stations.

The two trucks leave daily from the West Entrance to pick up waste from scheduled areas of the park, but every bin is not emptied daily. Previously, with five trucks stationed throughout the park, every bin and dumpster was emptied every day whether it needed it or not, and garbage was then hauled to a transfer station.

The overall result produces fuel savings, less wear and tear on vehicles and trash receptacles, and fewer large vehicles on park roads. All of Yellowstone's solid waste is collected by West District maintenance staff and delivered to the Compost Facility at West Yellowstone where it is processed.



A small electric utility vehicle is donated to Yellowstone through a partnership with Clean Cities and a Department of Energy grant.



# CONCESSION REPORTS

2012



## Delaware North Companies:

Delaware North contributed to the pilot of the Linx transportation program in Yellowstone (the Environmental Manager sits on the Linx Board). Our associates were provided with discounted tickets to encourage the use of the public transportation system, reducing the number of vehicles within the Park and therefore reducing our overall footprint.

DNC operates a successful commuter system for office staff. It continues to rely on staff traveling to and from the warehouse in West Yellowstone to the office in Bozeman for mail delivery. Carpooling is mandatory for all associates traveling on the same day.



## The Yellowstone Association:

Better fleet management and scheduling has enabled YA to consolidate transportation which further minimizes impact on the ecosystem. Re-assessing vehicle needs based on programmatic scheduling and operational needs has directed the organization towards purchasing more small vehicles allowing greater efficiency and flexibility.

# ENVIRONMENTAL PURCHASING AND WASTE REDUCTION

## NPS REPORTS

2012



### Getting it straight in GSA Advantage's Environmental Program:

The purchase of green products is now required for federal agencies but making the switch is often difficult with complicated government procurement processes.

When NPS staff in Yellowstone learned that their concession partners were successfully using 100% recycled office paper and purchasing it for the same price as the 30%, they were compelled to make the change too. There were understandable concerns that a higher recycled content would be an inferior quality paper although managers for paper manufacturing companies had also told Yellowstone it should make the change.

Several test runs were carried out with different papers to evaluate consistency. Once staff was confident in the proposed change a purchase was made on GSA Advantage. Unfortunately staff discovered that using GSA's general home page for a search provides completely different results than doing the same search through the GSA Advantage Environmental Program. Purchasing problems were finally resolved thanks to the support and patience of procurement staff but the paper that was ordered didn't perform the way we hoped, with reports of dust clogging printing machines! Yellowstone National Park is now using 100% and 30% recycled office paper but continues its search for the best and the greenest!

In 2012 the Green Team started working with Mammoth Supply Center staff to research green alternatives for other high use stock items. These efforts will ensure the park is providing environmentally preferred items at a reasonable cost.



Bear spray canister crushing in operation. Emptying the cans is done with care and protective clothing!



# NPS REPORTS

2012



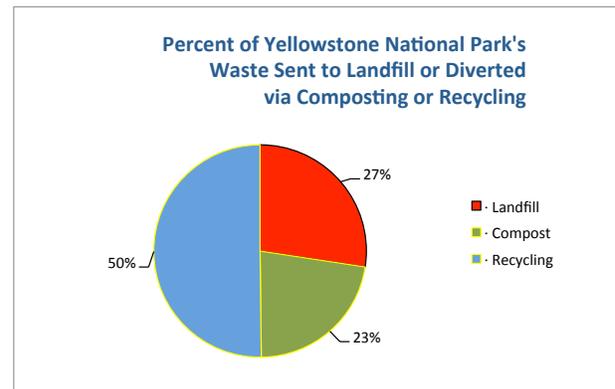
## Calculating Solid Waste Diversion for 2011:

| 2011 Total Solid Waste Diversion from Yellowstone National Park (YNP) |              |
|-----------------------------------------------------------------------|--------------|
| Recycling                                                             | Tons         |
| Aluminum (Cans, Foil, Plates/Pans, Scrap)                             | 18.84        |
| Antifreeze                                                            | 1.45         |
| Aerosols                                                              | 0.05         |
| Batteries                                                             | 9.87         |
| Cardboard                                                             | 258.74       |
| CD/DVD/Floppies                                                       | 0.01         |
| Cooking Grease                                                        | 25.15        |
| Electronics                                                           | 9.92         |
| Glass                                                                 | 151.21       |
| Lamp Ballasts                                                         | 0.04         |
| Lamps (fluorescent)                                                   | 1.44         |
| Linens and Textiles                                                   | 23.88        |
| Mattresses                                                            | 70.85        |
| Manure                                                                | 962.00       |
| Oil Filters                                                           | 1.97         |
| Oil Used                                                              | 28.98        |
| Other                                                                 | 3.94         |
| Packaging for Retail Shipments                                        | 2.90         |
| Paper (Office, Newspaper, Slick)                                      | 91.60        |
| Plastics (film and containers)                                        | 56.70        |
| Printer/Toner Cartridges                                              | 0.12         |
| Propane/Isobutane Canisters                                           | 15.00        |
| Steel/Tin/Scrap Iron                                                  | 216.60       |
| Tires                                                                 | 60.85        |
| Wood                                                                  | 320.64       |
| <b>Total Recycled</b>                                                 | <b>2,333</b> |

| 2011 Summary                                        | Tons         | Percent     |
|-----------------------------------------------------|--------------|-------------|
| Landfill                                            | 1,274        | 27%         |
| Compost                                             | 1,042        | 22%         |
| Recycling                                           | 2,333        | 50%         |
| <b>Total Waste (Trash, Compost &amp; Recycling)</b> | <b>4,648</b> | <b>100%</b> |
| <b>Overall Park-wide Diversion Rate</b>             | <b>3,375</b> | <b>73%</b>  |

Note: Compost plus Recycling divided by Total Waste = Diversion Rate

Yellowstone National Park managers and partners are striving to divert 90% of the solid waste produced in the Park from landfills by 2020. Yellowstone Environmental Coordinating Committee (YECC) monitors sustainability projects, like waste diversion, in Yellowstone. The YECC, West Yellowstone Compost Facility and Four Corners Recycling (Yellowstone's recycling contractor), aggregated each organization's solid waste statistics to determine the total amount diverted. Park employees, visitors, and partners diverted about 73% through recycling and composting initiatives in 2011!





# NPS REPORTS

2012



## Calculating Solid Waste Diversion for 2012

| 2012 Total Solid Waste Diversion from Yellowstone National Park (YNP) |              |
|-----------------------------------------------------------------------|--------------|
| Recycling                                                             | Tons         |
| Aluminum/tin/mixed cans                                               | 30.78        |
| Cardboard                                                             | 309.87       |
| Glass                                                                 | 188.13       |
| Paper (Office, Newspaper, Slick)                                      | 94.83        |
| Plastics (Film and Containers)                                        | 71.82        |
| Propane/Iso Butane Canisters                                          | 2.58         |
| Bear Spray Canisters                                                  | 0.14         |
| Antifreeze                                                            | 1.99         |
| Batteries                                                             | 9.66         |
| CD/DVD/Floppies                                                       | 0.02         |
| Cooking Grease                                                        | 23.59        |
| Electronics                                                           | 11.94        |
| Lamp Ballasts                                                         | 0.02         |
| Lamps - Fluorescent Lights                                            | 1.71         |
| Linens and Textiles                                                   | 15.40        |
| Mattresses                                                            | 28.59        |
| Manure                                                                | 372.05       |
| Oil Filter                                                            | 4.47         |
| Oil Used                                                              | 42.86        |
| Other - lost & found, donated items, fuel                             | 21.24        |
| Packaging for Retail Shipments                                        | 3.36         |
| Printer/Toner & Ink Cartridges                                        | 0.49         |
| Steel/Scrap Iron                                                      | 99.61        |
| Tires                                                                 | 64.41        |
| Wood Chips/Wood Pallets/Slash                                         | 34.79        |
| <b>Total Recycled</b>                                                 | <b>1,434</b> |

| 2012 Summary                                        | Tons         | Percent     |
|-----------------------------------------------------|--------------|-------------|
| Landfill                                            | 1,484        | 40%         |
| Compost                                             | 785          | 21%         |
| Recycling                                           | 1,434        | 39%         |
| <b>Total Waste (Trash, Compost &amp; Recycling)</b> | <b>3,703</b> | <b>100%</b> |

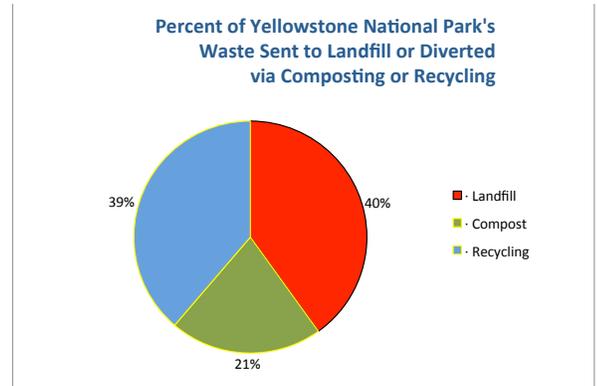
|                                         |              |            |
|-----------------------------------------|--------------|------------|
| <b>Overall Park-wide Diversion Rate</b> | <b>2,119</b> | <b>60%</b> |
|-----------------------------------------|--------------|------------|

Note: Compost plus Recycling divided by Total Waste = Diversion Rate

Park employees, visitors, and partners diverted 58% through recycling and composting initiatives.

Due to improved tracking and calculating the team was able to determine that in 2011 there was a large amount of manure hauled from the Stephen's Creek bison enclosures and horse corrals to the compost facility, a large amount of clean wood made into wood chips and a big clean up of white metals from the Mammoth bone yard. These items were considerably less in 2012, which resulted in a lower diversion rate.

Only 42% left to divert! 32% to reach 2020 goal!





# NPS REPORTS

2012



## Green Under Foot!

**Recycled Carpet** - Yellowstone National Park is a partner in a “plastic to carpet” program recycling plastic bottles and milk jugs to be used in carpet backing. In 2012 the park’s West District purchased recycled carpet for employee housing. The carpet was installed in three units: one at Madison and two at Old Faithful. There are now six units with this type of carpet in Yellowstone’s West District.

**Permeable Pavements** - The winter of 2011 – 2012 was the first for a recycled glass pavement installed at the Old Faithful Visitor Education Center. This material known as “FilterPave” is not only made of recycled materials but is also permeable with no leaching of oils or toxins. Its use will allow natural recharge of rain and snow reducing impacts of hard surfaces to sensitive soils and geothermal systems in the Old Faithful area.

**Plastic Decking** - Yellowstone has been using plastic wood in its boardwalks for many years and has seen the the product improve enormously to the point that it is used for structural elements in bridges and piers. In 2012 Yellowstone carpenters used plastic wood decking to replace old wood decking on the north side of the administration building in Fort Yellowstone. This should be the last replacement deck for a very long time and the boards blend in perfectly with the historic materials.



## “Buy Green” Training:

Yellowstone’s Green Team developed and presented a “Buy Green” training for staff authorized for credit card purchasing. Yellowstone’s Buy Green Training simplifies guidance and requirements for the federal government into an easy to use and basic guide. It suggests a process to help employees find the best environmentally friendly choices and tells them what specifications and labels to look for.

Environmentally preferable items in the same price range and the same performance as their less green competitors must be considered and used. GSA Advantage, which is the first place employees should search for products, now has an “Environmental Program” making it easier to find items and assess them.



Yellow Iron Excavation in Jackson provides Yellowstone with its first FilterPave permeable, recycled pavement.



# NPS REPORTS

2012



## Improvements to our Recycling Program:

Sixteen additional recycling sites were added in the park in 2012. Adding these sites to our recycling contract has enabled better recycling at key picnic areas and freed up NPS staff for other important tasks.

New signs were added to the recycling containers that can be easily switched out as bins are exchanged, moved or replaced. Recycling is designed to be clear and straight forward, please notify the Green Team if there are any problems or inconsistencies.

Five hundred posters were printed for distribution around the park and to our visitors entitled "What Goes in Our Recycle Bins". These are available for your office, work space or visitor center.

Carpenters recycled all the scrap material from both the plastic wood deck replacement project and the tile roofing for the Mammoth Administration building. The plastic wood was added to the plastic recycling taken by our contractor and the tile, which is a natural clay product, will be ground up for fill material. These actions saved the park money and staff time by avoiding haul and landfill fees.



## Recycling Bear Spray:

Yellowstone National Park crushes bear spray canisters collected throughout the region. Recycling information cards and plastic tubs for bear spray collection were distributed to pick-up sites in Yellowstone and Grand Teton National Parks as a way to safely collect and haul bear spray repellent (BSR) canisters. The bear spray recycling unit went on tour for Earth Day in Gardiner and for display at the Jackson Hole Eco Fair.

The Green team worked with education and media experts and the bear management office in Yellowstone to create a film explaining the importance of carrying and also recycling bear spray. The film was submitted to the My Green Parks Video Contest. Yellowstone achieved third place.



# NPS REPORTS

2012



## Bulb Crusher:

Yellowstone has recycled old bulbs for many years but it has been a cumbersome process using special boxes with limited capacity. In 2012 the electric shop purchased a bulb crusher which enables the park to collect, crush and recycle bulbs safely while reducing costs. The bulb crusher is designed to crush spent light bulbs into tiny fragments for less expensive disposal than manually packing them. An onboard vacuum sucks the bulb into the machine and does not allow the harmful mercury to escape until it is filtered out in a specialty recycling center.



## Recycling toner cartridges:

The NPS and concessioners have been recycling toner cartridges for several years. The Mammoth Supply Center collects all the NPS cartridges and works with the park's computer support staff to recycle them. There are several companies in Bozeman that refill or recycle cartridges. It takes them approximately 40 minutes to take apart, clean, and refill each one. Most cartridges can be reused at least 4 times. Recycled toner cartridges are now as high quality as new toner cartridges, but cost 30 - 50 % less. The cost reduction comes from not having to buy and work with the raw materials.

Toner cartridges are made up of 40% plastic, 40% metal and 20% foam, paper, rubber and toner. Up to 97% of the components of a toner cartridge can be recycled. Last year, Yellowstone saved \$12,000 by refilling almost 400 ink and toner cartridges, and diverted approximately 443 pounds of plastic and metal from the landfill.



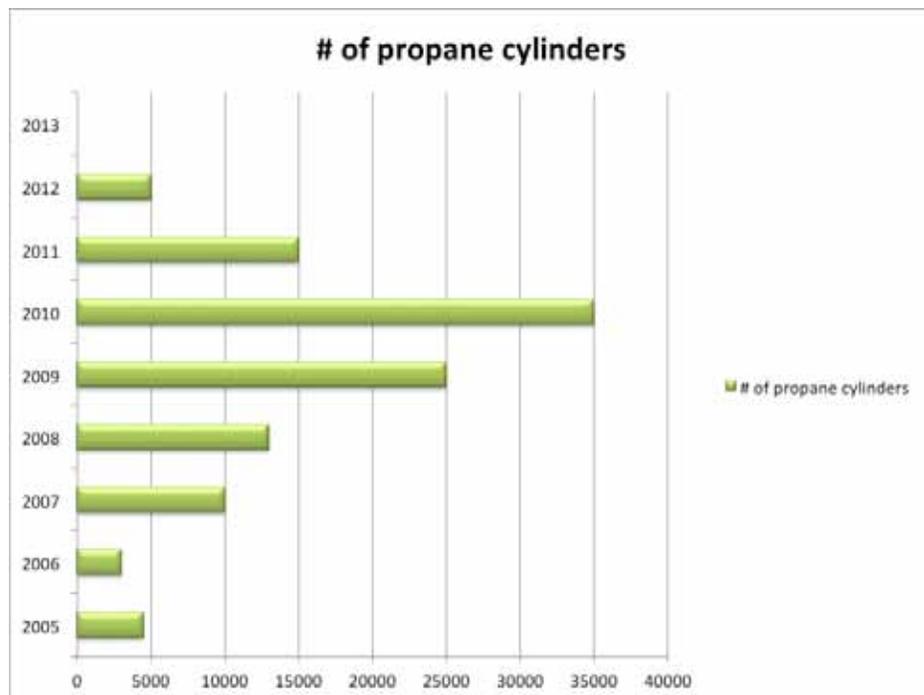
## ...A GREEN STORY 2012



### Propane Canister Recycling - Notes & Trends:

2012 saw a drop in the number of propane canisters crushed and sent for metal scrap recycling. Below is a breakdown of the program to date:

- 2005-2007: We were getting the 'word out' to park visitors that propane camping cylinders were being collected at Yellowstone's visitor centers, back-country offices, campgrounds and hotels for recycling.
- 2008: Wire mesh collection bins were added throughout the Greater Yellowstone Area including the Gallatin and Jackson County Airports, Grand Teton National Park, and Forest Service Campgrounds.
- 2009-2010: The 'word was out' and people recycled canisters they'd been stockpiling for years.
- 2011-2012: Quantities appear to be leveling-off.





# CONCESSION REPORTS

2012



## Delaware North Companies:

### Recycling

DNC continued to implement an extensive recycling program in 2012. Materials recycled included: paper, newspaper, cardboard, glass, aluminum (cans/foil/plates), plastic #1-7, plastic film, steel/tin, cooking grease, propane canisters, household batteries, fluorescent lights, ballasts, used oil, tires, wood pallets, printer/toner cartridges, select car parts, textiles, bear spray and electronics.

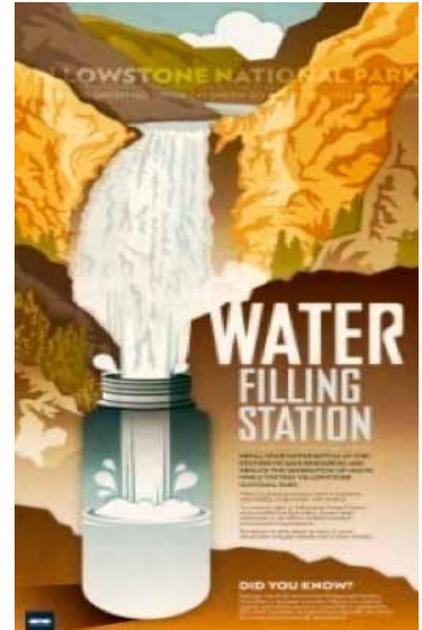
Warehouse trucks deliver products to the stores and then pick up recycling and back-haul the recyclables to the warehouse in West Yellowstone. There the materials are stockpiled and then sent for recycling. This back-haul method to recycling reduces greenhouse gas emissions and saves additional resources such as energy, time, staff, and equipment.

|                                 | 2009    | 2010    | 2011    | 2012    |
|---------------------------------|---------|---------|---------|---------|
| Trash (not including recycling) | 464,654 | 521,000 | 426,877 | 405,460 |
| Recycling                       | 230,200 | 268,214 | 233,466 | 296,157 |
| Recycling %                     | 33%     | 34%     | 35%     | 42%     |
| Waste Diversion Rate %          | 63%     | 63%     | 64%     | 68%     |

Waste reduction efforts included increased trainings for DNC's warehouse and retail crews, increased recycling bins within the warehouse areas and in public spaces, and basic dumpster dives to educate staff on what is in their trash.

### Waste Reduction

Two additional water filling stations were installed in 2012 at the Old Faithful Upper and Grant General Stores. These units provided free water to guests. Since 2010 it is estimated that 200,000 plastic bottles were prevented from being manufactured, shipped, used and disposed of thanks to the five filling stations throughout Yellowstone General Stores.





# CONCESSION REPORTS

2012



## Delaware North Companies:

### Products and Purchasing

In 2012, Yellowstone General Stores continued to implement Delaware North's Environmentally Preferable Purchasing Policy. This policy provides guidelines on the procurement and management of Sustainable Environmentally Friendly "Green" goods and services used by the Company.



Local and organic products were considered and purchased when possible. Made in Montana, Wyoming, or Idaho, and Native American products are preferred. Local artists and Native American artwork, food (e.g. huckleberry beer, wine, sauces, bread, Wilcoxson's ice cream), books, and souvenirs and gifts were purchased. DNC continues to look for local vendors; using Huckleberry Mountain (a high volume product) located in Jackson Hole.

Eco-Products, disposable compostable dishware and cutlery are purchased for DNC's food service operation: Bowls, Plates, To-Go Clamshells and Containers, Cups, Cup Sleeves, Knives, Forks, Spoons, Straws. Paper napkins, paper liners, and wood stir are biodegradable. DNC purchases literally hundreds of thousands of these products each year which will be converted to compost.

During 2012 over 60,000 reusable bags were sold. Interpretive signs were used to communicate their importance.

### Packaging

Cleaning products are purchased in bulk to reduce packaging waste.

DNC continued to use the Geami packaging system which uses Kraft paper, a renewable resource which is easily recyclable and biodegradable, rather than bubble wrap (a petroleum based product).

The General Stores continued to reuse packing material when possible (e.g. cardboard, bubble wrap, packing peanuts, Styrofoam, etc.) for guest purchases.



# CONCESSION REPORTS

2012



## Xanterra:

Xanterra set the bar high again in 2012 with a 73% diversion rate. Through innovative composting and recycling programs, 4 MILLION pounds of material were prevented from entering our local landfills. Of particular note is the significant increase in Xanterra's recycling rate for conventional recyclables (cans, bottles, paper, etc.), which saw an overall increase of 15% over 2011.

In addition to conventional recyclables, Xanterra also recycles used oil, tires, laundry bags, linens, electronic waste, curtains, batteries, cooking oil, manure, solvents, and more. In 2012, 60,000 pounds of used mattresses and 30,000 pounds of linens were donated to non-profits and businesses. All told, these recycled items added up to over 2 million pounds.

Three-bin In-room Waste Pilot - During the 2012-2013 winter operating season at the Mammoth Hot Springs Hotel, Xanterra is piloting a 3-bin waste collection system. Instead of the option of sorting only by recyclable vs. non-recyclable, guests now have separate bins for recycling, compost, and landfill waste. This system is intended to increase Xanterra's waste diversion rate incorporating new and enhanced waste messaging and signage.

Xanterra has put in place a bulk amenities program to be implemented parkwide. This program, which helps to eliminate waste through refillable inroom amenities, will continue to eliminate unnecessary materials from entering the waste stream. Through the same program, Xanterra changed its signature "bear soap" from an individually packaged product from China to a bulk packaged product from Vermont; supporting made in the USA products and reducing waste.



## The Yellowstone Association:

Green products (marmoleum, bamboo, local wood, paper stone, etc) are purchased and used whenever possible where YA is undertaking green building renovations to further embrace a greater level of sustainability.

YA has streamlined and minimized its waste stream while expanding recycling efforts at all facilities.



# CONCESSION REPORTS

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## Medcor:

Medcor's sustainability program began several years ago with a simple recycling program at all three clinics. Lake Clinic had the most success and proponents of the program suspected it was due to the accessible location of the large recycling bins for both the clinic and staff housing - a lesson in the importance of making it easy! Success rates were measured at the Mammoth clinic and lessons learned were applied in all three clinic locations including education and resource guides, as well as placing bins in close proximity to workspaces. It took about one season to get everyone on board, resulting in significant reductions of non-compostable trash.

Plans to increase sustainability at the clinics include further analysis into separating medical contaminated and non-contaminated waste for composting, such as glass and plastic IV delivery systems. Medcor has been working in partnership with NPS to facilitate participation in the national Drug Take Back Program for the last 2 years. This has resulted in community access to safe disposal of medications two times per year.

Other changes were made to improve patient care as well as increase sustainability, like switching from wet processing X-rays to digital processing, reducing material and chemical usage and waste. Furthermore, medical and office supplies used in the clinics are as environmentally friendly as possible.



## Yellowstone Park Service Station (YPSS):

YPSS continues to recycle oil, antifreeze, used filters, steel, copper, other metals, tires, batteries, light bulbs, paper, cardboard, glass, plastic, electronics, printer cartridges, bear spray and propane cylinders. In 2012 YPSS salvaged for reuse in the remodel of Fishing Bridge Repair Shop: posts, beams, windows, doors, dimensional lumber, brick, blocks. All other shingles and unusable wood was chipped for use as mulch. All scrap metal was recycled.

# Conclusion

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This report is a snap-shot of the actions taken in 2012 that will help implement the Strategic Plan for Sustainability.

In 2013 Yellowstone will continue to build on these projects, develop an improved framework for sustainability decision-making, planning and reporting to become more transparent and accountable over the long-term. Collecting and reporting on the actions will help to inform future actions by identifying areas for improvements.

As Yellowstone continues to integrate sustainable projects and reporting into normal operating procedures and projects, employees, partners and visitors will more clearly see what actions the park is taking to improve sustainability efforts. Yellowstone is confident that 2013 will result in more ambitious projects and partnerships that will continue and build upon our commitment to make Yellowstone Greener.

