



Date: January 5, 2010

To: Steve Whitesell

From: Shawn Norton

Subject: Plastic Water Bottles in National Parks and the Green Parks Plan

Background

Americans discard approximately 50 billion plastic water bottles each year. Producing that number of water bottles consumes approximately 20 billion barrels of oil and generates more than 25 million tons of greenhouse gases. National parks, as premier tourist destinations, use taxpayer dollars to manage the burden of discarded plastic water bottles. Notably, this is a relatively new financial burden, with global sales of bottled water quadrupling between 1990 and 2005. The Green Parks Plan calls for the following waste reduction goals related to plastic bottles:

- NPS will provide drinking water filling stations (capable to fit water bottles) at visitor facilities and will make them accessible both during and after normal operating hours. 75% of visitor facilities by 2016.
- **COLLABORATIVE OBJECTIVE:** NPS will require concession operators to sell reusable water bottles and halt the sale of disposable water products in visitor facilities with water filling stations. 75% of appropriate facilities by 2016.

The NPS Concessions office has expressed a concern over these goals and has asked the Director to consider the feasibility of these goals as it relates to concessions impacts.

Waste Reduction Potential and Financial Impacts

National parks spend significant amounts of money on solid waste removal, varying amounts of which are comprised of plastic water bottles. For example, Grand Canyon NP estimates that approximately 30% of their recycling waste is from plastic bottles. Eliminating this waste would decrease the amount of money the park spends on recycling removal by as much as 30%.

At Hawaii Volcanoes National Park, concessioners have shown net profits from the sale of reusable water bottles. The Hawaii Natural History Association estimates that it will gross \$80K

more from the sale of reusable versus plastic water bottles, estimating that at a minimum the 5,800 stainless steel water bottles sold replaced plastic bottles that might have been disposed.

The National Mall is a good example of the sheer amount of recycling waste generated in parks. The National Mall has recycled nearly 100 tons of material through their recycling program since July 2010. Based on Grand Canyon’s 30% plastic bottle figure, encouraging the use of refillable containers at NAMA could reduce annual recycling rates by 150 tons.

The National Parks listed below are known to be exploring how to reduce or eliminate the use/sale of plastic water bottles. If each of these parks banned plastic water bottles, they would eliminate more than 665 tons of waste from the waste stream (see table below). Moreover, by not supporting the purchase of bottled water, those parks would be conserving over 18 million kWh of energy per year —enough to power over 1,600 U.S. homes for a year.

- Hawaii Volcanoes NP
- Grand Canyon NP
- Boston Harbor NHS
- Death Valley NP
- Lake Mead NRA
- Manzanar NHS
- Whiskeytown NRA
- Yellowstone NP (not formalized)
- Kalaupapa NHP
- Fort Vancouver NHS
- Lava Beds NM
- Zion NP
- Lake Roosevelt NRA
- Santa Monica Mountains NRA
- Grand Teton National Park

The following National Parks are known to not sell disposable plastic water bottles:

- Aztec Ruins NM
- Big Thicket NP
- Canyonlands NP , Maze District
- Dinosaur NM
- El Malpais NM
- El Morro NM
- Grant-Kohrs Ranch NHS
- Little Bighorn NM

Table 1: Potential Recycling Waste Reduction *

Park	Total Recycled Tons (not incl. C&D or composting)	Est. Total Recycled Tons w/out Water Bottles	Electricity Conserved (kWh)**	GHG Emissions Mitigated (MTCO2E)
Hawaii Volcanoes NP	5	1.5	41,666.70	29.9
Grand Canyon NP	974.7	292.41	8,122,506.50	5,833
Grand Teton NP	68.7	20.61	572,500.46	411
Death Valley NP	66	19.8	550,000.44	395
Lake Mead NRA	187.6	56.28	1,563,334.58	1,123
Zion NP	81	24.3	675,000.54	485
Fort Vancouver NHS	7.7	2.31	64,166.72	46.1
Kalaupapa NHP	20.7	6.21	172,500.14	124
Lake Roosevelt	7.6	2.28	63,333.38	45.5
Lava Beds NM	5.5	1.65	45,833.37	32.9
Santa Monica Mountains NRA	1	0.3	8,333.34	6
Yellowstone NP	789.5	236.9	6,580,560.82	4,726
Totals	2215	664.55	18,459,737	13,257

*Estimates provided for parks that reported recycling waste diversion rates for 2009 only.

** Each ton of PET (used to manufacture plastic water bottles) requires 27,777.8 kWh to produce.¹ The number is only for production and does not include energy consumption from transportation or disposal.

Where Else Have Plastic Water Bottles Been Banned?

National Parks are not the first to consider discouraging bottled water consumption. Below are just a few examples of where bottled water has been banned or replaced.

In October 2010, Italy banned visitors from bringing plastic water bottles into the Cinque Terre National Park, along the Italian coast. The park was becoming inundated by plastic water bottles left by its 3+ million annual visitors, so it provides aluminum water bottles to visitors at the park entrance and filling stations along the nine miles of coast. In August, the peak visitation month, visitors discard an estimated 400,000 water bottles, which will be diverted from the waste stream under the new program.

Takoma Park, MD; San Francisco, CA; Fayetteville, AR and Vancouver, WA are just a few cities which have prohibited the purchase of bottled water for city employees or events. They cite the environmental impacts as well as the irresponsibility of using taxpayer money to fund the cost of purchase and disposal. A total of 20 cities in the US have prohibited the purchase of bottled water by municipalities.²

The Sundance Film Festival partnered with Brita two years in a row to eliminate plastic water bottles from the festival. According to a contact from the Sundance Film Festival, to the relief of the event organizers (who were concerned about dehydration in the arid climate), the initiative was very well received by the event attendees. So much so, that they will continue to provide reusable water bottles and filling stations at future events in partnership with Brita.

Rock Resorts and Vail Resorts Hospitality implemented their "Water on the Rocks" program to eliminate plastic water bottles from guest rooms in all of their properties. They provide reusable containers and filling stations with an estimated diversion of 640,000 plastic water bottles from the waste stream.

Customer/Visitor Feedback

National Parks are ideal locations for modeling and educating the public about sustainable behavior. Given that bottled water consumption is a fairly new phenomenon in the United States, reverting to tradition water consumption patterns is not only good for the environment, but good for parks' budgets. Due to effective outreach and communication, Zion NP reports that visitor response is excellent. Hawaii Volcanoes notes similarly that visitors rarely complain and that the rangers and shuttle bus drivers model the behavior for visitors. HAVO undertook a special campaign to reach out to shuttle bus drivers. As a result, 160 Ecotour operators took the pledge to use refillable water bottles at the park.

¹ Gleick, PH and Cooley, HS. 2009. "Energy Implications of Bottled Water." *Environmental Research Letters*. IOP Publishing, VOL 4:014009

² http://www.crystalline-water.com/go_green/bottled_water_bans.html. Note: Fayetteville, AR and Takoma Park, MD are not included in the list on this website.

Draft Briefing Statement

Bureau: National Park Service
Issue: Eliminating the Sale of Disposable Water Bottles in Parks
Date: December 10, 2010

ISSUE: Initiatives to eliminate the sale of disposable water bottles in parks, and replace them with reusable water bottles and water filling stations, are in place at several Parks, and are being considered at other parks. Concerns have been raised over the financial impact to concessioners, and the ability to provide adequate facilities to ensure visitor satisfaction and safety in the Park.

BACKGROUND: The use of disposable water bottles has been identified as a significant resource use issue in the U.S. The 2007 Harpers Index provided the following statistics:

- Estimated amount of oil, in barrels, used to make the bottled-water containers sold in the U.S. last year: 16,000,000.
- Ratio of the amount of water used to make the containers to the amount of bottled water consumed: 2:1.
- Bottled water costs from 240 to 10,000 times more than tap water, depending on the brand and delivery.

At the park level, the use of water bottles has been targeted as an opportunity for the following reasons:

- The NPS is committed to conserving resources and reducing and waste generation.
- The volume of recycling attributable to plastic water bottles can be significant and result in large operational cost to Parks and concessioners.
- A disposable water bottle ban reduces the potential for improperly disposed water bottles (e.g. disposed in non-recycling trash or as litter).
- The water bottle program provides education to visitors about reusable alternatives to disposable products.

ACTIVITIES TO DATE

- Formal programs have been implemented at ZION (2009) and HAVO (2010). At ZION the concessioner in its proposal proposed the program.
- GRCA issued a memorandum instituting this program at the Park beginning January 1, 2011. (May 21, 2010).
- The NPS identified the elimination of disposable water bottles as a goal in its draft Green Parks Plan (November 2010).

RESULTS TO DATE

- ZION: The program generated an overall financial loss for Xanterra of approximately \$25K it per year. This represents around 2.6% of departmental income and about .5% of total income. History Association data was not available. Eliminated sales of over 60,000 bottles of water, removed approximately 5,000 lbs of trash from the waste stream annually, visitor Center energy use reduced 10% by removing coolers, receives some initial complaints which have lessened in 2009-10
- HAVO: Program generated an overall financial gain for Hawaii Natural History Association; annual gross sales revenue of \$20,000 for bottled water vs. annual gross sales revenue estimate of \$99,000 for stainless steel water bottles. Eliminated sale of over 5000 disposable water bottles. Removed

approximately 500 lbs of trash from waste stream annually. No significant complaints received from visitors

- GRCA: Although not yet implemented, Xanterra representatives indicated an anticipated \$300K loss or about .5% of revenue.

CONSIDERATIONS FOR IMPLEMENTATION

- Concession contracts stipulate that the NPS can request changes in the type and quality of merchandise sold. NPS is required to provide the concessioner a reasonable opportunity for profit.
- Negative impacts for large operation are likely to be very small compared to overall revenue/profit. (Negative impact would be greater for concessioners such as vending machine operators who could not recover any costs through water bottle sales.)
- Some local environmental issues might exist such as locally scarce water supplies; however, these are unlikely to outweigh overall environmental benefit.
- Concessioners have been challenged to provide reasonable prices reusable water bottles.
- Reusable water bottles have been identified as a souvenir opportunity.
- Some visitor impact and dissatisfaction is possible; educational programs are critical to provide awareness to visitors.
- Adequate filling stations need to be present to ensure health and safety of visitors.
- Cost and impact of installing and maintaining filling stations must be considered.

CONCLUSIONS

- Eliminating disposable water bottles and using refillable ones is a valid sustainability goal and is part of the Green Parks Plan (November 2010).
- Concessioner financial impacts, local environmental and refill station construction should be considered before any decision.
- Phase-in within the parks may be a means to manage concerns.
- Park-level Visitor education is critical to manage visitor satisfaction.

Kurt Rausch/WASO/NPS
01/07/2011 07:18 AM

To Laura Joss/DENVER/NPS@NPS, neil@nationalparks.org
cc Jo Pendry/WASO/NPS@NPS
bcc
Subject Fw: Beverage Life Cycle Analysis

History:  This message has been replied to.

Hi Laura and Neil:

Several weeks ago when Jo Pendry and I met with representatives from Nestle Water, they shared with us that they had completed a life cycle analysis of their water bottling operation. Brian Flaherty of Nestle recently sent the link to this study as well as several studies conducted by the International Water Bottle Association (IWBA) regarding their carbon footprint. For your information, the links are provided below as well as the Executive Summary form the IWBA report

*incl. -
lg. water
bottlers*

Interestingly, Brian willingly disclosed that their internal study revealed that on balance, tap water is the preferred alternative to bottled water on a complete life cycle basis. This report finding has apparently made Nestle unpopular with some other bottlers.

I Look forward to our discussion this morning.

Thank you,

Kurt M. Rausch
Contract Management Team Lead
NPS Commercial Services Program

*- meeting w/ Margaret on climate change
Subcommittee*

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Full Nestle LCA, including the peer review: www.beveragelcafootprint.com

U.S. Bottled Water Industry has Very Small Environmental Footprint, According to a New Study:
<http://www.bottledwater.org/news/us-bottled-water-industry-has-very-small-environmental-footprint-according-new-life-cycle-inven>

Updated IBWA Environmental Fact Book Includes Life Cycle Studies
<http://newsmanager.commpartners.com/ibwa/issues/2010-07-01/5.html>



IBWA LCI Exec Summ FINAL.pdf