

BEachfest GREEN Waste Initiative Report 2014

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Collaborators:

BEST, The Chewstick Foundation, Catlin End to End, Greenrock, Keep Bermuda Beautiful, Ministry of Works and Engineering - Department of Waste Management

BEachfest GREEN 2014 Waste Initiative Report

Summary:

Bermuda's Annual Beachfest Emancipation Celebration, hosted by The Chewstick Foundation, is one of Bermuda's largest events; held annually on Emancipation Day during the festive Cup Match holiday period. Beachfest's humble beginnings consisted of families and friends picnicking on Horseshoe Bay Beach, on a day that celebrates emancipation. Chewstick's goal, in hosting the event, which they started to do around 9 years ago, was to bring the scattered groups of friends and families together, uniting everyone in one large event, instead of many disconnected gatherings.

Last year (2013), due to funding constraints and a delayed Department of Parks Permit, Chewstick reluctantly moved Beachfest to Snorkel Park. This move was met with resistance by the public and thus divided attendees between Snorkel Park and Horseshoe Bay Beach. As a result, the Horseshoe Bay premises were not monitored and vacationers ran free, drinking underage and leaving trash strewn about.

This year, Chewstick was able to work with the Department of Parks, and the Beachfest tradition returned to Horseshoe Bay Beach. Chewstick set together an elaborate logistics plan, outlining the beach in plots that would be filled with sponsors, vendors and activities. A gate system was proposed in order to screen entrants. Fully staffed bars would be part of the organization, thereby eliminating the desire to bring one's own beverages. Glass bottles and unnecessary items on the beach would be restricted, and wristbands would be applied so that alcohol consumption could be monitored.

These steps were intended to reduce the negative/dangerous behaviour exhibited by the public while decreasing the environmental impact of the day. Chewstick saw that this was an ideal opportunity to create a collaborative effort to help address the environmental impact of such a massive event, while also helping to introduce an environmental message to a previously untapped demographic. Volunteer, Antonia Issa led the effort and it was branded BEachfest GREEN.

Unfortunately, as time drew closer to Beachfest, the Department of Parks denied Chewstick's logistics proposal for various reasons¹. Within a week of the event, a new MOU was drafted by Parks indicating that: Parks would be responsible for the maintenance and cleanup of Horseshoe Bay Beach including the area occupied by Chewstick for Beachfest, that no gate would be set-up, among other things. Chewstick's only responsibility with regards to cleanup would be to ensure that its campus be cleaned up after the event and that it provides 5 individuals to assist in the process.

The "campus" would include the Chewstick stage, and vendor/sponsor tents on the west side of the beach. With no control of intake of public and items brought to the beach, Chewstick could not obtain a liquor license. Additionally, due to a lack of funding in general, and no funding through sponsorship for cleanup, the scope of BEachfest GREEN significantly changed.

¹ Main reasons were challenges around gating a public access beach on a National Holiday, and charging

BEachfest GREEN began as an invitation to community stakeholders to participate in a collaborative cooperative, working within Chewstick's original logistics plan to create a waste management and sustainability education initiative that could be used as a starting point for the development of a No Trace event.

The hope was that future large-scale events in Bermuda could be modeled upon the BEachfest GREEN pilot, and that each year, large-scale events could refine the framework, working towards being as environmentally sustainable as possible. While the progress of the initiative was constrained through the shifting obligations of Chewstick to the Department of Parks, Chewstick remained committed to the ideals behind BEachfest GREEN, and implemented it as best they could, knowing that Horseshoe Bay Beach would be filled with people.

Organizations participating in this cooperative were BEST, Department of Works and Engineering, Catlin End-to-End, Greenrock, Keep Bermuda Beautiful, and The Chewstick Foundation. Based on the MOU, the Department of Parks also committed to assisting during the course of the event.

BEachfest GREEN Goals were as follows:

- 1. To create an on-going cooperative of organizations working towards increased awareness and improved waste management for large-scale events.**
- 2. To educate the public about reducing what they pack, and encourage them to pack out (take away) what they bring onto public property/ camping areas.**
- 3. To engage the public to manage their own waste on site and to assist in the clean up efforts with a team of volunteers.**
- 4. To collect data for a waste audit in order to calculate the volume and types of waste produced enabling better analysis of environmental impacts, trash reduction and clean-up success in future years.**
- 5. To develop and introduce Green Vendor guidelines that can be adopted for use in other large-scale events in Bermuda.**

Scoring BEachfest GREEN

Following, we have outlined each goal, and underneath, the tasks and items that were applied to the goal in question. Using feedback in the spirit of a 360-degree feedback, we received responses from the cooperative, volunteers and the public (at Beachfest).

We relied heavily on qualitative data in this pilot initiative and have developed a grading system of green, yellow and red indicating whether we felt the task was accomplished successfully, was in need of improvement, or was a flop. While we had aimed to gather more quantitative results, this pilot initiative was met with a few constraints.

We:

- a) Did not have strict success metrics outlined for some of the goals prior to implementation,
- b) Did have strict success metrics for other goals (ie. Waste audit), however due to the fact that the BEachfest GREEN team sought to attend to waste removal for all of Horseshoe Bay and not just the Beachfest campus, consistent gathering of data, proved to be a challenge.
- c) Did have separate waste bins and recycling bins, however due to lack of sufficient bins and human power as well as a lack of cooperation from the public, much of the waste was left as litter. For this reason, we were unable to create a waste count based on number of bags used, as had been planned.
- d) Had hoped to receive accurate data from the Department of Parks regarding the total weight of waste that was removed from Horseshoe Bay, but the information received thus far from Department of Parks has not been able to be confirmed as the complete total according to the Tynes Bay Weigh Bridge operator, so estimated total weight will have to be assumed.

GOAL 1. The BEachfest GREEN Cooperative:

The development of a cooperative was essential to BEachfest GREEN, and was concluded to be a success due to the active participation of the cooperative members, who went above and beyond initial agreed-upon terms.

Initially the participants' contributions were set out as follows:

1. Participation in a three-hour workshop prior to Beachfest
2. Participation in one meeting before Beachfest
3. Participation in one meeting post Beachfest.

The individuals in the cooperative actually contributed in the following ways:

1. Participating organizations met as a group for a three-hour workshop prior to Beachfest.
2. Each participating organization provided resources and edited documents (Volunteer Letter & Vendor Guidelines) created by Antonia Issa, the volunteer coordinator of the initiative.
3. Antonia met each organization individually for at least two hours, to receive input and direction for the initiative.
4. The cooperative assisted greatly in recruiting volunteers for the day, by sending a volunteer request through their channels and confirming attending volunteers.
5. Participating organizations provided materials and supplies needed for BEachfest Green like: 15 recycling bins, 15 waste receptacles, recycling and trash bags, tongs and weighing scales. Department of Parks provided 17 trash bins, cases of trash bags and disposable gloves and KBB provided a case of clear trash bags to conduct the waste audit.
6. On the day, each organization contributed between 2-6 hours, helping with set-up, or cleanup

7. BEST, on its own accord, wrote a letter to the editor of the Royal Gazette, diffusing criticism towards The Chewstick Foundation, and commending it for its efforts
8. Participants attended the post-event debrief, a 90-minute meeting.

GOAL 2. Public Education

BEachfest GREEN's public education campaign was slated to commence prior to Beachfest, exist the day of, and continue after the event through the generation of this report and a press release. The conclusion, is that all education avenues below have been attempted, some with more success than others. Overall, public education was a success within the borders of the Beachfest campus on the day of the event. More campaigning could have occurred pre-event and extending past the Beachfest campus to the greater public, proved to be a significant challenge. Awareness was brought to the public through:

1. The BEachfest GREEN Marketing Campaign
 - **Yellow score**, the BEachfest GREEN marketing campaign (radio, newspaper ads, posters etc.) was compromised due to a lack of funding. However, efforts were made through social media and the launch of an overhauled www.beachfestbermuda.com website, the first event-site of its kind. Though late to launch, it received considerable traffic and introduced the BEachfest GREEN Brand.
2. Messaging and a press-release prior to Beachfest
 - **Yellow score**, because green messaging "Bring only what you need. Leave nothing but footprints." was presented, albeit only as an excerpt of the Beachfest press release, instead of as an entire release.
3. Trash Mountain during the event
 - **Red score**, because initially this was approved by Department of Parks with agreement that the dumpster would be positioned just behind the concession and within the view line of a major pedestrian entry artery. The day before Beachfest, Department of Parks rescinded its approval and relocated the dumpster to the back of the parking lot, out of sight of the public.
4. Signage posted during the event
 - **Green score**. BEachfest GREEN volunteers painted a large BEachfest Green Banner, and well thought out, funny taglines were hand-painted on up-cycled banners and were posted throughout the Beachfest campus, even to the east side of Horseshoe Bay. Many people took photos on the "Green is Sexy" trash removal vehicle. One vehicle's use was graciously donated by Newstead Belmont Hills, while the primary "Gator" vehicle was provided by Windreach Recreational Village for a small donation.

5. Photo-documentation during the event

- **Yellow score.** Our designated photographer for the event was a no-show. As a result we did not receive the level of detailed photography that we had planned for. Thankfully Bryant Richards of Geminii Photography was on site during the event and has provided images free of charge.

6. 60-second scramble, trash pick-up announced by MC during the event

- **Green score.** The MCs throughout the event made sure to announce a cooperative effort to pick up trash and recycling, every hour on the hour. Based on their feedback, the crowd within earshot responded well.

7. BEachfest GREEN tent with Green Organization Branding, in a visible location during the event

- **Green score.** This was our volunteer home base, where shade and refreshments were provided to our volunteers. Many people visited the tent to ask about BEachfest GREEN, thanking us for the initiative and many more came by once they realized that they could pick up trash and recycling bags at this location. This facilitated the public cleaning up after themselves. We were pleased that the organizations participating in the cooperative could be represented here with their branding.

8. Publicly released report post-event, and press release.

GOAL 3. Cleanup on site, with Volunteers

BEachfest Green rounded up 6 times the volunteers that were promised as part of the MOU with the Department of Parks. 30+ people donated their time to cleanup efforts for Beachfest from Wed. July 30, through Fri. August 1, 2014. On Wednesday, volunteer teams installed signage and trash cans and collected the service vehicles. On Thursday from 11:00am-11:00pm, volunteer shifts ran for two-hours each. There was an additional shift the following morning from 6:00am – 11:00am. About two thirds of the volunteers participated in one shift and the other third participated in two shifts.

Tasks included:

1. Setting out bins throughout the designated campus.

- **GREEN SCORE.** A total of 15 recycling bins and 41 trash bins were set up by volunteers, the night before the event, both on the Beachfest campus and extending out to the east side of the beach and the parking lot area. This includes Department of Parks bins, but does not include the 9 concrete bins along the path from the Concessionaire to the parking lot.

2. Removal of trash and recycling from bins

- **YELLOW SCORE** Volunteers worked to monitor trash on the entire beach and parking area, in addition to the contracted Beachfest campus area. Volunteers worked tirelessly throughout the day, emptying bins, replacing bin liners and then shuttling the trash and recycling to the dumpster and adjacent area. From the hours of 11:00am – 7:00pm, volunteers were able to keep up with emptying the filling bins. However from 7:00pm-9:00pm due to a mass exodus from the beach, the public was dumping trash into or near the bins, or not picking trash up at all. This exponential increase in trash depositing coupled with diverted efforts to provide bags directly to the public, made emptying bins impossible. Also one of the trash vehicles had little traction in the deeper sand on the east side of the beach, which hampered transportation efforts.

3. Lining bins

- **GREEN SCORE** Volunteers were provided blue recycling bags from the Department of Works and Engineering – Waste Management Division, as well as transparent and black trash bags. This permitted waste removal workers to identify recyclables and trash. Bins were correctly lined, which assisted in the waste removal process. Initially, Department of Parks had not lined the colourful KBB bins, which made emptying the first round, a challenge.

4. Driving waste to the dumpster

- **GREEN SCORE** As volunteers emptied bins, they also transported the waste to the dumpster and the recyclables to a cordoned off area adjacent to the dumpster. Throughout the course of the event and in the hours after the event, the volunteers' use of this donated vehicle was vital to the maintenance of a clean Beachfest campus. Using another vehicle, volunteers went above and beyond, picking up waste from the most easterly side of the beach, and taking it to the dumpster grounds. As part of the MOU, the Department of Parks had committed to providing two workers, one vehicle and an additional dump truck to assist with waste removal during the event. The Department of Parks vehicle and a worker, however, was seen transporting tents and coolers for the attendees.

5. Provision of recycling and trash bags to attendees, explaining the importance of picking up after oneself

- **GREEN SCORE** Volunteers walked up and down the entire beach carrying trash and recycling bags. They engaged with individuals and groups of attendees, finding kind and creative ways to encourage people to take the bags and pick up the litter around them. More often than not, the public was very receptive and began cleaning up right away. Other people would then approach the volunteers asking for bags.

6. Assisting in the waste audit

- **GREEN SCORE**. A waste audit document was prepared prior to the event. Volunteers, led by Vanese Gordon, Department of Works and Engineering – Waste Management Division, made efforts to collect samples of full trash and recycling bags, weighing them and identifying their contents as a proportion of: waste, recyclables and organic waste. This activity occurred in the mid-late afternoon. Due to a shortage of volunteers during this shift and an increase in other demands, we were not able to obtain the sample size we had hoped, however mixed with observations made by volunteers in the field we found that the data collected could be extrapolated with reliable accuracy.

7. Sweep of the Beachfest campus, removing all stray litter post event

- **GREEN SCORE**. A team of BEachfest GREEN volunteers led by Anne Hyde at Keep Bermuda Beautiful, arrived at 9:00pm on Thursday to lead the cleanup efforts. All litter was removed from the Beachfest campus by 11:00pm. Trash and recycling was bagged and piled up to facilitate transportation by the Department of Parks the following morning. While an attempt above and beyond, was made to bag the immense levels of litter on the east side of the beach, barely a dent was made.

8. Cleaning up the shoreline

- **GREEN SCORE**. Because of the sheer quantities of litter strewn across the entire beach, and due to the dedication of the volunteer clean up team, efforts were made to clear the entire shoreline of Horseshoe Bay Beach of litter that risked being pulled into the ocean by the next high tide, or blown off shore by wind. This was prioritized and completed effectively up to the high tide mark. In the future it would be fruitful to recruit snorkel or scuba volunteers to sweep the surf as well.

9. Providing feedback

- **GREEN SCORE**. Volunteers were asked to provide feedback on their experiences the day of Beachfest as well as in writing, in the days after the event. Many volunteers provided recommendations, anecdotes and opinions on successes as well as concerns. Much of this report has been based on this feedback that was gratefully received.

Firsthand volunteer reports illustrated mixed reviews. Provided are some excerpts:

"People asked us about BEachfest GREEN and thanked us when we told them about the initiative."

When members of the public were approached with trash and recycling bags responses included:

"Thanks, we've got our own", "Thank you!" or later in the day, blank stares.

A common response when people were approached to pick up the trash around them was “it’s not mine”, or “it wasn’t me”.

“Bins were filled early on with cardboard from newly purchased tents and chairs.”

“Amazingly clean compared to previous years!”

“People came up to us with their trash and recycling as we were picking up litter along the beach.”

“I was brought to tears when I saw the condition of the entire beach after the event.”

GOAL 4. The Waste Audit

A waste audit form was produced prior to Beachfest. The goal of the waste audit was:

1. To collect data from a sample of full trash and recycling bags that could be extrapolated to the larger event (weight, %recyclables, %organic, %trash)
 - **GREEN** (copied from Goal 3). A waste audit document was prepared prior to the event. Volunteers, led by Vanese Gordon, Department of Works and Engineering – Waste Management Division, made efforts to collect samples of full trash and recycling bags, weighing them and identifying their contents as a proportion of: waste, recyclables and organic waste. This activity occurred in the mid-late afternoon. Due to a shortage of volunteers during this shift and an increase in other demands, we were not able to obtain the sample size we had hoped, however mixed with observations made by volunteers in the field we found that the data collected could be extrapolated with reliable accuracy.
2. To analyze specific problematic/excessive types of trash
 - **GREEN** Volunteers were engaged to identify specific problematic and excessive types of trash. The feedback we received is outlined in the Waste Audit Data section below.
3. Approximate the number of trash/recycling bags filled during the event (assuming that there was minimal litter)
 - **RED SCORE**. Volunteers were unable to ascertain the number of trash bags filled during the course of the event due to the fact that we did not have an accurate count of the bags that we had started with and were unable to monitor the different ways in which the bags were distributed (to the public & lining bins). Initially, we had thought that this would be a good way to track the total number of trash/recycling bags filled, providing valuable metrics, and it may function for future large-scale events, but in this case, the team was overwhelmed and did not have time nor the means to make an accurate count. In future, requesting the Department of Parks to have the dumpsters weighed before disposal would give an accurate tonnage of the waste created during the event.

4. Receive a final weight of trash/recyclables in and adjacent to the dumpsters by Department of Parks.
 - **RED SCORE**. Mr. Clark Tear, Western Superintendent, Dept. of Parks has given disposal weight information in October 2014, however there is no way to confirm that it is complete information and can give us the total weights of all trash disposed of from the event.
5. Analyze the effectiveness of recycling based on placement of bins
 - **GREEN SCORE**. Beachfest had less recycling bins than trash bins provided, and based on the arrangements in which they were placed, (recycling and trash bin as a pair, or trash bin alone) we were able to calculate whether or not they were used effectively. Results showed increased effectiveness of trash bin use when it was paired with a recycling bin. More information below in Waste Audit Data.
6. Estimate optimal number of bins required for such an event
 - **GREEN SCORE**. Based on the numbers that we were able to extrapolate below, we feel that we were successful in identifying optimal number of bins for Beachfest.
7. Estimate optimal number of volunteer workers required for such an event
 - **GREEN SCORE**. Based on the numbers that we were able to extrapolate below, we feel that we were successful in identifying the optimal number of volunteers for Beachfest.
8. Visualize, through photographic evidence, the amount of litter pre, during, post event and the following morning.
 - **YELLOW SCORE**. Unfortunately our photographer was a no show. However Bryant Richards with Geminii Photography offered the use of his photos. Antonia Issa took additional photos, and news sites were sourced for others.
9. Determine origins of waste (public personal items/vendors/sponsors).
 - **GREEN SCORE**. We were able to ascertain quite easily that most of the waste comprised of personal items brought to the beach by the public. Since Chewstick did not acquire a liquor license, there were no alcohol sales, which resulted in the public dragging coolers stocked with bottles of alcohol, to the beach. Additionally people packed many personal belongings (some brand new, which increased packaging waste), and abandoned everything on the beach. The vendors, on the other hand made efforts to serve with minimal packaging, green-ware, and cleaned up their sites at the end of the event. Sponsors may have considered not bringing inflatable giveaways as these have a tendency to drift into the ocean, polluting the waters.

Waste Audit Data and Thought Experiment

Average results from the data sheets

- Average weight of trash bags was 27lbs.
- Average weight of recycling bags was 48lbs.

Problematic/excessive waste items:

- Glass bottles
- Cardboard and plastic packaging from new “camping” gear (tent/chair boxes)
- Alcohol boxes
- Personal items left as litter (towels/shoes/makeup/chairs/umbrellas/tents/coolers)

Approximate number of trash/recycling bags used

Due to the lack of numbers of volunteers and based on the sheer numbers of attendees and their over-packing habits, we were unable to keep track of the number of trash and recycling bags that were used for the event. In light of the shortage of manpower, we also recognize that on the east side of the beach, (which we were not responsible for, but tried to assist with), we were unable to contain waste in trash/recycling receptacles after a certain point in the afternoon. The rate of waste disposal and littering was higher than the manpower available, which resulted in waste strewn everywhere along the sand. This made it impossible to count trash bags, as no bags had been used for much of the litter.

Analysis of Methods

In this, a first attempt at a waste audit for a large-scale event, we were unable to obtain quantitative data, however we have created a thought experiment based on a visual analysis of the event and a few numbers that we *do* know. While this thought experiment does not claim to be exact, we have used our better judgement in an attempt to generate an illustration of the level of waste that was generated on Horseshoe Bay on July 31, 2014.

We must bear in mind, that for the purposes of this exercise, we are calculating levels of waste by weight, as this is a standard for waste audits in general. However, in future waste audits, we hope to capture information that can better illustrate the complexity of waste. Here are examples of few questions that we could ask in future waste audits:

What is the weight of waste generated?

What is the volume of waste generated?

What manpower is needed to clean up the waste?

What energy is required to move the waste?

What potential damage can different categories of waste have on different parts of the environment?

What were the sources of waste?

How can we reduce the generation of waste?

What are peoples' views around waste?

How can we teach people to manage their own waste?

So, in order to develop a logical thought experiment we have created two categories:

What we know:

- Average weight of trash bags was 27lbs.
- Average weight of recycling bags was 48lbs.
- Approximate weight of individual consumer goods left as waste on the beach (eg: empty beer bottle).

What we assume:

- 6000 attendees (Royal Gazette report)

Important to note: There were many more recyclables than trash at Beachfest, with glass bottles comprising the bulk of the recyclables. Because many of the bottles ended up as litter in the sand due to being constructed as bottle fences and then not picked up, they were not *separated* as recyclables. Thus, when a tractor arrived in the morning to quickly scoop up the waste in time for the public to be able to enjoy Horseshoe Bay Beach again, bottles and non-recyclable waste were gathered together in bulk.

For this reason, much of the recyclable material ended up in the trash. Further enquiry with the Department of Parks revealed that the Park's dump trucks hauled mixed loads of recyclables and burnable trash 'to make the truck full' and took it all to the Tynes Bay incinerator. The recycling which had been carefully kept separate up to that point was not hauled to the recycling facility as it should have been. We believe that more efforts need to be made by public and relevant agencies to ensure that Bermuda is recycling. More recycling bins could alleviate challenges in the process, and increased manpower; however we feel that education is key to making a difference. Let us begin the thought experiment.



The image below was captured by Bryant Richards of Geminii Photography. (East beach looking west).



The above image also captured by Geminii Photography, illustrates a view from the west side of the beach looking east.



The image to the left (Geminii Photography) portrays a signpost for Beachfest. This shows that the Beachfest campus and main attractions were to the right (west) and a football pitch and “tent city” were to the left (east). The east part of the beach did not fall under Chewstick’s responsibility.



The above image, captured by Bernews, illustrates a rather orderly tented area with a glass bottle fence perimeter. Many camps constructed bottle fences, which contributed largely to the waste generated at Beachfest.



To the left is an image (Gemini Photography) of volunteers armed with blue recycling bags, emptying trash.

Here is a sample list of items that people brought to Horseshoe Bay that were also left behind at the beach. The content of the list was created by taking stock of actual items that were left behind as litter, after the event. It does not take into consideration items that may have been taken home, or vendor/sponsor waste.

Items left on the beach as litter

Item	Item Weight (lbs.)	#people /item
1 Wet Towel	8	1
1 empty 12oz glass bottle	0.44	1
1 full bottle spirit	3	4
1 empty spirit bottle	1.5	4
Pair of shoes	1	1
Makeup/sunscreen	0.25	1
Clothing	2	1
Tent	50	8
Folding Chair	3.5	2
Umbrella	3	2
Portable bbq	2	6
Packaging	1.5	1
Cooler	8	8
Food waste	1.5	1
e-waste	.25	1
Table	10	6
Tiki Torches	3	10

Now, not each person left all of these belongings on the beach, so let us adjust the numbers a little. Remember, all estimates are based on attendance of 6000 people. If we estimate the percentage of people who attended Beachfest who used a particular item, then divide that number by the number of people per item, multiply in the item weight, and multiply by the percentage of users we estimate left this item behind, we get a final item weight that was likely left as litter or trash on the beach.

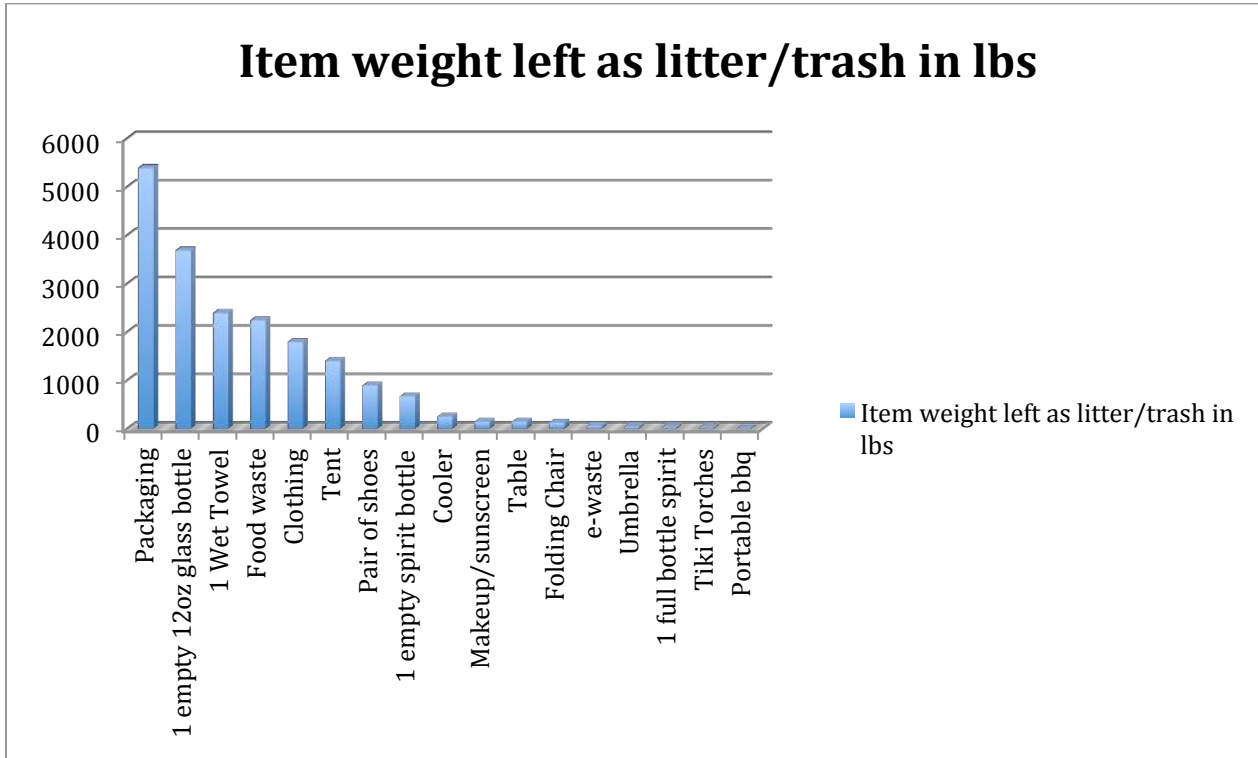
Items left on the beach as litter, by weight

Item	Item Weight (lbs.)	#people /item	% of people using this item	% of users who left this item behind	Item weight left as litter/trash
1 Wet Towel	8	1	100%	5%	2400
1 empty 12oz glass bottle	0.44	2	70%	100%	3696
1 full bottle spirit	3	4	30%	2.5%	33.75 ²
1 empty spirit bottle	1.5	4	30%	100%	675
Pair of shoes	1	1	100%	15%	900
Makeup/s unscreen	0.25	1	50%	20%	150
Clothing	2	1	100%	15%	1800
Tent	50	8	75%	5%	1406.25
Folding Chair	3.5	2	25%	5%	131.25
Umbrella	3	2	10%	5%	45
Portable bbq	2	6	10%	5%	10
Packaging	1.5	1	60%	100%	5400
Cooler	8	8	85%	5%	255
Food waste	1.5	1	25%	100%	2250
e-waste	.25	1	85%	5%	63.75
Table	10	6	60%	2.5%	150
Tiki Torches	3	10	15%	10%	27
TOTAL					19,393 lbs

Based on these conservative estimates (ie the assumption that 4200 people out of 6000 consumed only one single 12oz. bottle of beer/cooler throughout the course of the entire day) the total estimated waste produced at Horseshoe Bay beach on July 31, 2014 was 19,393 lbs. or 9.69 tons (US short ton). That's

² 6000 people x % people using item / #people per item x %users who left item behind x item weight

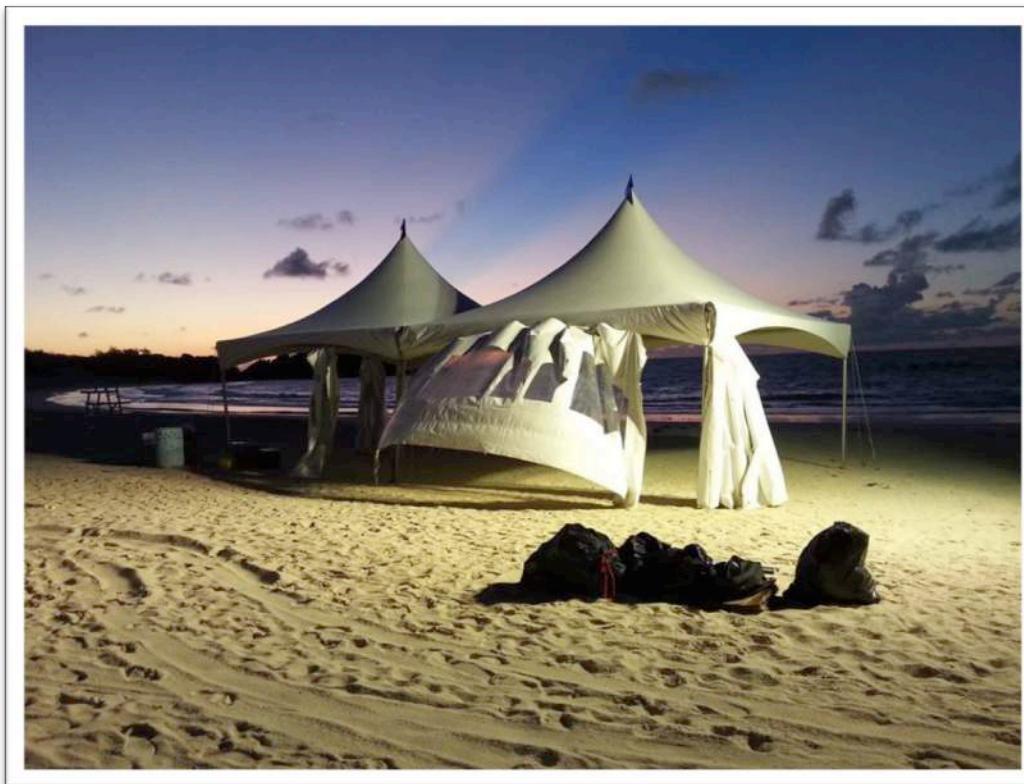
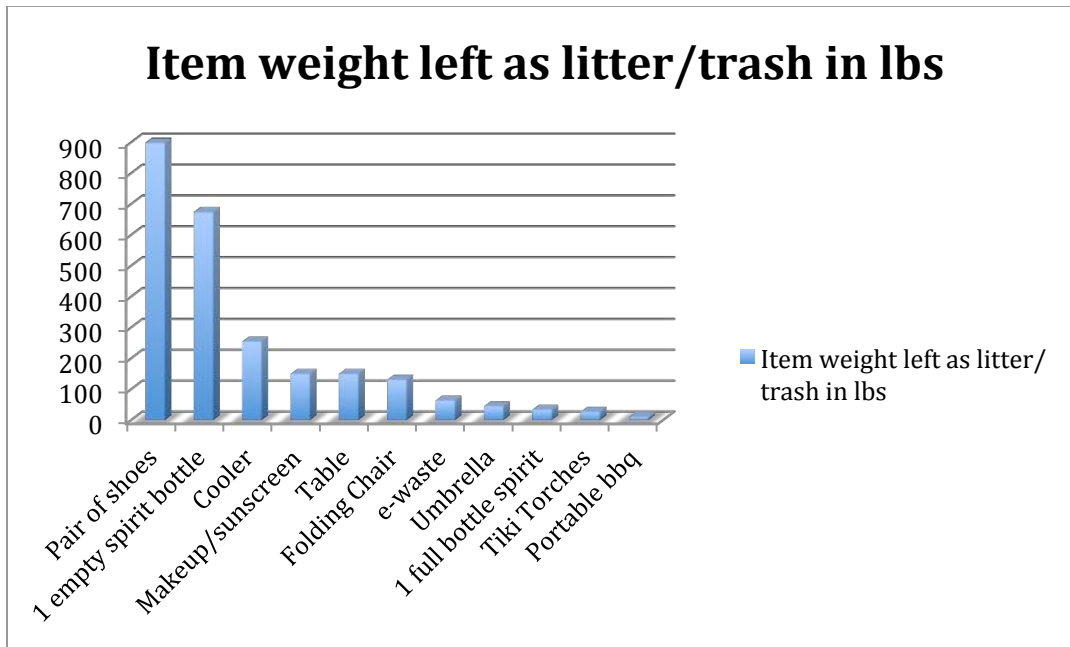
about the same weight as 65,000 bananas, or 6464 scooter helmets. No matter how you slice it, it is a shocking amount of public consumer waste.



According to this estimate, the top 6 waste items by weight are:

- **Packaging** – including boxes for alcohol; boxes for brand new pop up tents, chairs umbrellas and barbecues; plastic bottles and food packaging
- **2 empty 12 oz glass bottles** – for 4200 people, which is an extremely conservative estimate and likely would have actually been ranked above **Packaging**
- **1 wet towel** – wet, because once the towel has been left on the beach, it absorbs moisture and gets covered in sand, substantially increasing its weight
- **Food waste** – we provided a conservative estimate for this too, where only 1500 people left 1.5 pounds of food
- **Clothing** – a surprising amount of clothing was neglected on the beach.
- **Tents** – at least 28 tents remained abandoned on the beach after the event.

The rest of the items were distributed as follows:



Our volunteers worked hard to pick up as much as they could. They successfully cleared the Beachfest campus. To the left is an image of the Beachfest stage area at around 5:45am August 1, 2014



Above is an image of the east side of Horseshoe Bay Beach at around the same time on August 1, 2014.

In this image you can see the amount of trash overflow from the bins, and the litter in the background. This photo was taken after the BEachfest GREEN volunteers had cleared the shoreline, after they had attempted to pick up litter and place it into trash bags, and after early-morning scavengers had arrived to search for treasures.

Effectiveness of recycling based on placement of bins

- When recycling bin was placed next to a trash bin, 95% of the contents of the recycling bin were recyclables.
- When a trash bin was placed next to a recycling bin around 90% of the contents of the trash bin was trash (with 10% recyclables).
- When a trash bin was placed alone, at least 50% of its contents were recyclables.

Therefore we can conclude that by placing a recycling bin next to a trash bin, the recycling bin will be used optimally and the trash bin although not used optimally will be used more appropriately than if it is standing alone. There are two possible reasons that trash bins are not being used optimally when paired with a recycling bin:

- a) Some members of the public are not educated regarding the benefits of recycling and/or
- b) The round cutout hole in the recycling bin is difficult for inebriated people to use.
- c) Given the volume of recyclable material the recycling bin was filled before the trash bin

Optimal number of bins/ Optimal number of volunteers

- Beachfest and the surrounding areas had 15 recycling bins, and 41 trash bins in total (counting the permanent trash bins in the corridor by the concessionaire).
- BEachfest GREEN volunteer power averaged at 3 people per hour. One individual would remain at the tent, and a pair would travel up and down the beach emptying bins, handing out bags, or collecting litter.
- In order for a total of 15+41 bins to house 6000 estimated bags of trash, they would have each had to be changed 107 times throughout the day, or 9 times/hour.
- This translates as 504 bag changes per hour. Split between 2 people, that would mean that **each person would have to change 252 bags/hour**. (That's 4.2 bags/minute or 15 seconds per bag). Give that a try in 90-degree heat, 95% humidity and soft sand.
- In actuality, it took a pair of volunteers approximately 1.88 minutes to change one bag (almost 2 minutes). Meaning that it would take them 1.5 – 2 hours to change all the bins (56) that were at Horseshoe Bay Beach (both inside and outside the Beachfest campus), if their only job was emptying bins. This calculation does not take into consideration:
 - The movement of the waste to the dumpster area,
 - All of the other tasks that volunteers engaged in.
 - Additionally, the calculation assumes a steady pace of waste removal, where in reality from 11:00am – 7:00pm, waste removal was manageable, and from 7:00pm onwards, with the mass exodus of the public, it became impossible to manage.
- At their actual speed, it would have taken our volunteers 188 hours to clean up 6000 bags of trash, and that is if it was bagged, when much of it was not and was left as litter on the sand. That's almost 8 days!

So how many pairs of people would we have needed for waste removal based on these numbers? Assuming we maintained the existing number of bins (56), and a block of 12 hours (event hours +2) we would have required 15.67 pairs of people/hour or 31.34 people. Because each person worked a two-hour shift, which would mean that a 188 different people would be needed JUST to empty bins.

If we were to factor in all the other tasks, like driving waste to the dumpster, handing out bags and picking up litter, we could add on another 50 people. In order to deal with the amount of waste that was generated during Beachfest, we would have needed a team of **238 people**.

Because much of the waste ended up as litter, especially on the east side of the beach and along the road leaving Horseshoe Bay, we know that 56 bins were not enough. Because much of the litter was recyclable, we know that more recycling bins were needed. However, we also must remain cognizant that littering an event with bins everywhere does not add to the beauty of the environment, and while it may reduce litter, does not reduce the effort needed to remove the waste. Overall, we can conclude that there was just too much waste at the beach, and that concerted efforts need to be made by the public, to limit what they are taking to the beach.

We can conclude from these extrapolations that not only did we not have the bins necessary for such a large-scale event, but even with 6x the volunteer manpower (as requested by Department of Parks), we were still grossly under-manned.

GOAL 5. Green Vendor Guidelines

BEachfest GREEN initiated the creation of Green Vendor Guidelines. This was a new initiative that sought to bring environmental awareness to vendors that were attending BEachfest. This year, focus was paid on vendors (mostly food and beverage), and not sponsors. In future years, we would seek to include sponsors too. Vendors were encouraged to:

- Minimize packaging
 - **GREEN SCORE**. Vendors made concerted efforts to minimize packaging. They avoided distributing napkins, wrapped items in paper instead of boxes where possible, used simple wooden skewers, and did not use lids or straws for drinks.
- Use environmentally friendly packaging where possible
 - **GREEN SCORE**. Vendors opened discussions with their suppliers and sourced environmentally friendly packaging. They used biodegradable corn cups, cardboard clamshells instead of polystyrene, bamboo spoons and reusable cloth bags instead of plastic.
- Leave their site tidy after the event
 - **GREEN SCORE**. Vendors were diligent about leaving the premises tidy and free of litter at the end of the event.

We would like to thank the following vendors for participating in this initiative:

Ashley's Lemonade
Brunswick Bakery
Cavon Steede
Delano Rawlins
Jamaican Grill
Snowy's

Going forward, we aim to refine our Green Vendor Guidelines so that they can be used effectively for a range of events in Bermuda.

Final Remarks

The challenges around BEachfest GREEN:

- We are unable to ascertain how many people attended Beachfest 2014. Estimates range that between 4000 and 7000 people were on the beach throughout the course of the day. That the estimates vary so drastically is further evidence for increased control around this particular public holiday on Horseshoe Bay Beach. A gate would provide the opportunity to account and prepare for attendees more accurately.
- Because there was no way to screen people entering the beach the public was arriving with excessive belongings.
- Many items appeared to be newly purchased as much of the trash throughout the earlier part of the day consisted of cardboard and plastic packaging.
- Sponsors provided giveaways that included inflatable balls. These are particularly dangerous in marine environments as they are easily blown away into the water.
- Attendees became so intoxicated over the course of the day that communication with them with regards to waste management became almost impossible.
- Attendees abandoned their belongings on the beach; it appears that many people make considerations about what to pack in order to have a fun day at the beach, but rarely consider the fact that they must also pack these things and remove them from the premises when they leave.
- Relevant authorities had challenges enforcing laws regarding intoxication on the beach and littering due to sheer numbers of attendees. However, they did make arrests for fighting and a few cases of over-intoxication.

Recommendations from the collaborating group at BEachfest GREEN

- **Gate the Beach - similar to Bermuda Rugby, BTA Events and Peace Concert held in other public areas and parks**
- **Permit Chewstick to charge an entry fee to support Chewstick administration and all Waste Management Expenses**
- **Card all attendees, wristband those of drinking age - to reduce the instances and impact of underage drinking**
- **Reduce the Hours - Allows clean up in daylight at the end of the event**
- **Ensure Government interdepartmental collaboration - create a win for everyone**

Conclusion

BEachfest GREEN was a great first effort in piloting the ideals around environmentally friendly large-scale events in Bermuda. The initiative realized most of its objectives and the organizations and people involved were dedicated and passionate toward the cause. The west side of Horseshoe Bay Beach was left clean by Thursday 11:00pm on the day of the event, bags of trash and recycling having either been moved to the dumpster or left in neatly arranged piles for the Department of Parks to collect the following morning. Only a few rental tents and an empty stage remained, which were dismantled and picked up the following morning.

From a wider environmental and social perspective it is sad and unfortunate that BEachfest GREEN was not able to make a telling impact beyond the borders of the Beachfest campus. The east side of the beach was in a deplorable state after the close of the event. Nicknamed "The Zombie Apocalypse", the beach looked as though a storm had passed through. Glass bottles were strewn everywhere, entire full coolers and tents were left abandoned.

It is difficult to describe the magnitude of waste to people who had not attended the event. There were shoes, inflatable balls, makeup, wallets, chairs, towels and clothes half buried in the sand. It was as if each person on Horseshoe Bay Beach on July 31, 2014 had brought a suitcase to the beach, opened it, shook it around and then walked away, leaving everything behind.

The level of intoxication of the public could not be monitored since they brought their own alcohol. As such, people quite literally drank/smoked themselves into a stupor, becoming unintelligible and careless.

We believe that this display is a symptom of social issues that are deeply engrained in Bermudian culture on institutional and public levels. On the institutional level, there appears to be a lack of education surrounding environmental sustainability, recycling, waste-management, and not unrelated: under-age drinking and drinking and driving.

There also seems to be a lack of enforcement and control around these issues by relevant agencies. Furthermore, there lacks the infrastructure to employ proper disposal of waste i.e. Recycling not being recycled due to lack of recycling bins. The public appears to be uneducated regarding the aforementioned subjects and quick to absolve themselves of any individual accountability and responsibility.

Because these issues have proliferated themselves across an entire culture, we strongly believe that we need to tackle this from the bottom up, and from the top down. We need to come together, raise funds and develop an educational campaign, teaching people to respect what is theirs so that it will still be around for future generations.

We consider this event to have been a small but firm step forward, towards gaining momentum and the ability to educate both the government and the public about waste reduction, recycling and behaving in a more sustainable manner, which parallels the core ideals of The Chewstick Foundation and the organizations that made up the collaboration. There is a long road ahead, and we would like to thank the following for coming on board to tackle this issue on the frontline.

Volunteer/Staff list BEachfest GREEN 2014

Alan Gordon
Angela Ming-Bean
Anna Terceira
Anne Hyde @ Keep Bermuda Beautiful
Anne Mello @ Catlin End to End
Antonia Issa
Aruna Dismont
Ayana Bean
Bella
Bryant Richards
Carly Lodge
Carra Maybury
Daniele Bortolli
David Zebny
Deidra-Lee Bean @ Chewstick
Gavin Smith @ Chewstick
Gordon Johnson @ Greenrock
Gracie Edwards
Hannah Collins
Haile Maryam @ Chewstick
Imani Chapman
Imani's daughter
Jenille Smith

Jo-Dina Pearman
Jocelyn Morrisson
Kathleen Keane
Kim Smith @ BEST
Kirsteen Brown
Kofi Desu
Makeem Bartley (Haz)
Najib Chentouf @ Chewstick
Marquedelle Rodriguez
Matthew Johnstone
Michael Keats
Nelda Smith
Omari Dill
Patrick
Paulo Curi
Punky
Radhesen
Sandy Arnott
Sarah Daniels
Sharla Bean
Sterlin Smith
Tariqah Walikraam
Vanese Gordon @ Waste Management

Appendix

- i. Volunteer Request Form**
- ii. Green Vendor Guidelines**
- iii. Waste Audit Sheet/Form**
- iv. Thank You Letter to Volunteers**
- v. Further Reading**

i. Volunteer Request Form

BEachfest GREEN Volunteer Shout out 2014

Beachfest is arguably Bermuda's biggest summer event! This means that the beach will be packed with dancing, swimming, eating, drinking and even camping partiers. We all know that lots of partying can result in a messy area and it is our priority this year to make sure that we all make an effort to keep the beach beautiful.

Join us in making improvements to Beachfest as part of our BEachfest GREEN volunteer team! We want this to be a litter free event, leaving only footprints behind when we leave.



This year is the first step towards creating a no trace event. 1. To educate the public about reducing what they bring to the beach, and either taking it home or disposing of it at the end of the day 2. To collect statistics measuring the approximate amount of trash and recyclable materials generated so that we know what to improve on for next year.

Will you assist us in making this a litter free event?

Shifts will begin on July 31 at 11:00am. Each shift runs for 2 hours with the last one ending at 11:00pm. There will be an additional shift on August 1 from 6:00am-8:00am for the early risers.

Keep Bermuda Beautiful has volunteered to sign up for the 9:00pm-11:00pm shift already!

Please complete the Google sign up form by Monday July 28, 2014. Please sign up early so that you get the shift that works best for you!

BEachfest GREEN Volunteer Registration Form (<http://goo.gl/DVS2kg>)

There will be a BEachfest GREEN shady tent, so that you can relax and enjoy between shifts. Refreshments will be provided.

Please wear clothes that you don't mind getting dirty. Please protect yourself with sunscreen and a hat! We will provide cleanup supplies. Bring a pair of gardening gloves if you have some handy.

If you have any questions, do not hesitate to contact me issantonia@gmail.com. Thank you!

Antonia Issa,
The BEachfest GREEN Initiative @ Chewstick

Supported By:



ii. Green Vendor Guidelines

BEachfest GREEN Vendor Guidelines 2014

Earn a Green Vendor Certificate through your active participation with the **BEachfest GREEN Vendor Guidelines**. Beachfest is an environmentally friendly event. Our waste management plan requires vendors to use environmentally friendly packaging and to reduce packaging where possible.

A team of committed **BEachfest GREEN** volunteers and the Department of Parks are coordinating the collection and sorting of recyclable materials and trash all through the event. We believe that the role of vendors is key to managing the problem of litter.

This year we invite you to become a Green Vendor and help us keep the event as litter free as possible. If we can minimize waste at the point of sale, this will greatly reduce waste left on the beach throughout and after the event. The location is especially sensitive since it is a marine environment, and winds can easily blow trash into the water making it difficult or impossible to collect, killing marine life. Let's work together to create our first steps towards a no trace event, leaving only footprints behind.

Green Vendors will be recognized in the media and on the day of the event. Earning a Green Vendor Certificate is easy!

1. Start by asking your suppliers for environmentally friendly packaging. Please try your best to:
 - Avoid polystyrene (Styrofoam)
 - Use cardboard boxes
 - Use paper cups instead of plastic cups
 - Use paper plates or bowls instead of plastic disposable plates
 - Think about ways to reduce packaging eg: do not offer drink lids, offer bulk condiments instead of single ketchup packets, do not offer plastic bags, wrap items in paper instead of using boxes. Be innovative!
 - Provide foods that don't require utensils
2. **Straws are not permitted on the beach. Please do not provide them**
3. Encourage your staff and customers to use bins for all waste products-large and small!

What else do I need to do?

- Please complete and sign the Green Vendor pledge form on the next page and return it with the rest of your application for a site
- On the day, please ensure that you are placing your stall's waste and recycling in the correct bins as advised by the BEachfest GREEN volunteer team. Maintaining good communication with them regarding your waste requirements is essential.
- Any vendor leaving their site in an unacceptable state by closing time will be charged a cleanup fee of \$200.00
- All Green Vendors in compliance with our guidelines will receive special recognition in the media, a Green Vendor Certificate, and pride that they are carving the sustainable path for future events in Bermuda.

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Green Vendor Form 2014

Contact Name:

Business Name:

Phone Number:

Stall Number (office use):

Green Vendor Pledge: I pledge that we will adhere to the following guidelines for Beachfest 2014.

Signature _____

Product Type	Environmentally Friendly Packaging Options	Indicate which packaging you will be using
Cold Drinks	<ul style="list-style-type: none"> • Paper Cups • Reusable Cups • Cans • Glass • Paper Straws NO PLASTIC STRAWS	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Food	<ul style="list-style-type: none"> • Paper/cardboard cup • Paper bag • Paper plate • Wax paper • Cardboard Noodle Box • Cardboard Clam • Wooden Skewer • Newspaper Avoid Providing Napkins NO Styrofoam	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Utensils/ Condiments	<ul style="list-style-type: none"> • Bamboo utensils • Bulk Condiments Avoid Providing Plastic Utensils	<input type="checkbox"/> <input type="checkbox"/>
Merchandise	<ul style="list-style-type: none"> • Paper Bags • Reusable Cloth Bags Plastic Bags and Packaging NOT Permitted	<input type="checkbox"/> <input type="checkbox"/>



Thanks to our Supporters

iii. Waste Audit Sheet/Form

WASTE AUDIT 2014

- 1) Objective:
 - a. To quantify the amounts and types of waste generated at Horseshoe Bay on July 31, 2014.
 - b. To document public's accuracy of use of recycling and trash bins.
 - c. To visualise amount of litter pre, during, post event and the following morning.
 - d. To determine origins of waste (vendors/public personal items).

- 2) Materials
 - a. Two hanging scales
 - b. Transparent garbage bags
 - c. Blue bags for recycling
 - d. Gloves
 - e. Data Sheets/binder/clipboard
 - f. Dune buggy

- 3) Method – Quantifying at Waste Stations:

Each volunteer has signed up for a two hour shift collecting waste throughout the beach, emptying bins and replacing bags. Filled bags should be brought to the buggy path.

 - a. Volunteers
 - i. Note how many bags you have tied off (that were full and that you closed up) during your shift on the data sheet
 - ii. At the end of their shift, volunteers must bring between 6-10 filled bags (1/2 blue 1/2 transparent) to the BEachfest GREEN Tent.
 - iii. Weigh these bags and note their total weight on the data sheet
 - iv. Visually estimate the proportion of recyclables (Aluminum/glass/tin), organic waste (food/drink/ice) and trash (other) in each bag (for both the recycling and trash bags)
 - v. Take the bags out of the tent up to the buggy path for collection by Parks

 - b. Leader
 - i. Receive Green Vendor forms
 - ii. Visit Vendors on site 3-5 times to identify that the materials being used are in line with what was entered on the form
 - iii. Identify how the vendors/corporate tents are dealing with their waste

- 4) Results

This study will measure results through quantification, visualization and extrapolation.

 - a. We will provide a best estimate of the total number of bags of waste produced on July 31, 2014 split by category: recyclable, trash.
 - b. We will provide photographs of the area pre, during, post event and the following morning in order to analyse disposal habits of vendors and the public.
 - c. We will attempt to identify where most of the waste originates.

- 5) Analysis
Report to be submitted

Data Sheet

Name: _____ Shift Time: _____ Total # of bags tied off during your shift: _____

Bag #	Blue Recyclable	Black/ Transparent	Bag (lbs) Weight	% Recyclables	% Organic	% Trash
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

On a scale of 1-10 (1 being littered and 10 being clean) how did the beach look during your shift? _____

Name: _____ Shift Time: _____ Total # of bags tied off during your shift: _____

Bag #	Blue Recyclable	Black/ Transparent	Bag (lbs) Weight	% Recyclables	% Organic	% Trash
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

On a scale of 1-10 (1 being littered and 10 being clean) how did the beach look during your shift? _____

iv. Thank You Letter to Volunteers

Thank you letter to BEachfest GREEN Volunteers August 5, 2014

Good Afternoon All,

I would like to send my sincerest thanks to the 30 inspiring people who came out on Thursday July 31 and Friday August 1, 2014 to help with the BEachfest Green Initiative.

It is with mixed emotion that I am sending this message to you. Please note that I am not a political person, and that in my communications I seek only to provide honesty, clarity and transparency. I understand that everyone has their own story to tell, this is the one coming from me.

I have deep admiration for your dedication and tenacity in facing over 5000 attendees and their messes this year over the Cup Match holiday. While it may have seemed like a lost cause, given the amount of trash that was strewn on the beach on August 1, we did make a difference. When I returned to Horseshoe Bay at 5:30am on Friday morning, the Chewstick Beachfest campus (West side of the beach) was clean. Our volunteers had worked through the day, removing trash bags, and changing liners. After the public had gone, volunteers picked up every single bit of trash that had been left behind, and had it bagged and ready for Parks to take away with their tractor.

So congratulations to you. I know it was not a pretty job.

What I also know is that that we made a dent, even if it was a small one, in the attitudes of some of the public. Many people were cooperative and supportive when we provided them trash and recycling bags, immediately picking up their beer bottle "fences". Other people took photos in the "Green is Sexy" buggy, and helped to put their recycling and trash in the appropriate bins. Many people noticed we were there, and approached us thanking us for our efforts.

On the flip side, I was disappointed by the lack of action and control from Parks. You may not be aware, but Chewstick's official responsibilities were restricted this year. The original intention had been to set up a gated perimeter with security, monitoring what was to come onto Horseshoe Bay. Chewstick in this situation would have provided the bar with TIPS trained staff, distributing only to legal individuals and only with paper cups (not bottles). At the very last minute, this plan was denied, and Parks took over responsibility of the premises, except for the small area where the Chewstick tents and stage were to be. The MOU required Chewstick to have at least 5 people available to help with cleanup. We provided 30. The one parks officer that I did see during the day on Thursday on a few occasions, I saw picking up people and their belongings and taking them to and from their camps. The only time I saw him haul any trash was when I stopped him driving his empty buggy and loaded him with some bags that were unable to fit into my buggy.

Throughout the day, our volunteers were the only people who took trash and recycling to and beside the dumpster even though Parks had committed to having two staff doing the same.

I know that when we witness something that looks as bad as Horseshoe Bay beach did the day after Beachfest, the first thing that we want to do is place the blame. I think that this problem is not one person's or group's fault, but an unfortunate combination of conflicting histories and interests of various stakeholders.

Chewstick did not have the funding and support to control the articles entering the beach. Parks is understaffed and other departments are underfunded. Even with the provision of extra bins from the Department of Waste Management and Parks (donated by Keep Bermuda Beautiful), we only had about one tenth of what would have been required for such a population. The Bermudian public are not educated about packing light as the Bermudian idea of camping involves bringing the entire contents of their house to the beach. The public have also not been educated and policed regarding underage drinking and drinking and driving. Tourists seem to follow suite.

In order to address this deeply engrained issue, I strongly believe that we need to tackle this both from the bottom up, and from the top down. We need to come together, raise funds and develop an educational campaign, teaching people to respect what is theirs so that it will still be around for future generations.

While the easy way out is to point the finger at Chewstick, we must be honest with ourselves and recognize that this is not the fault of a charity organization. Horseshoe Bay beach would have been packed with people irrespective of Chewstick's involvement on the day. Furthermore, July 31, is not the only day in the year when this type of chaos occurs. The entire Cup Match holiday, including Non Mariners and the Cup Match Classic, have similar problems as well as other large scale events throughout the year.

I consider this event to be a small step forward, towards gaining momentum and the ability to educate both the government and the public about waste reduction, recycling and behaving in a more sustainable manner. There is a long road ahead, and I would like to thank you for coming on board to tackle this issue at the frontline.

I hope that we can continue this dialogue, working together to help the public recognize the severity of their actions, and to understand the urgency in changing behaviours.

To a job well done.

Many thanks.

I am generating a report of the data and impressions that were collected throughout Beachfest, to be submitted publicly. If you have not already done so, please send me your thoughts (strengths, weaknesses, opportunities, threats etc.) regarding the BEachfest GREEN Campaign, and the uncontrolled gathering of large populations in Bermuda.

Best Regards,

Antonia Issa @ The Chewstick Foundation

v. Further Reading

Books:

Schumacher, E. F. *A Guide for the Perplexed*. New York: Harper & Row, 1977. Print.

Schumacher, E. F. *Small Is Beautiful; Economics as If People Mattered*. New York: Harper & Row, 1973. Print.

Unruh, Gregory. *Earth, Inc.: Using Nature's Rules to Build Sustainable Profits*. Boston, MA: Harvard Business, 2010. Print.

Websites:

- <http://www.climatepath.org/forbusiness/greenevents>
- <http://www.davidsuzuki.org/what-you-can-do/reduce-your-carbon-footprint/how-to-host-a-sustainable-carbon-neutral-conference-or-other-event/>
- <http://mfe.govt.nz/publications/sus-dev/major-event-greening-guide/index.html>