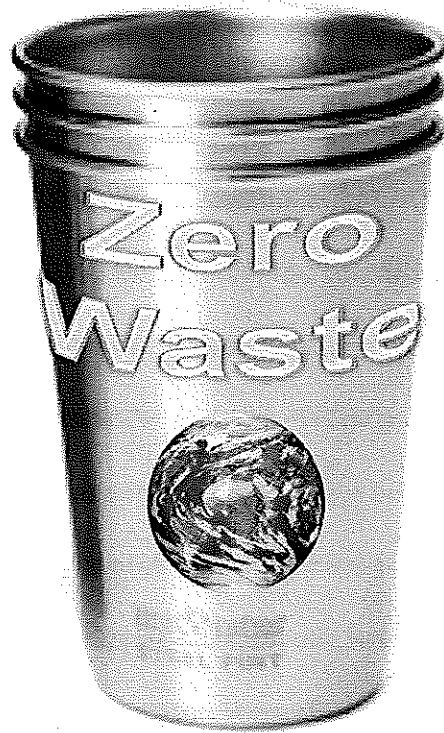


Zero Waste at Arcata Plaza Events



ENVS 410
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Fall 2012

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Problem Statement

Waste generated at large events on the Arcata Plaza contributes to environmental degradation. The environmental degradation is a result of waste being land filled and recycled. Land filling and recycling requires energy, transportation and the use of natural resources.

Background

Farmers Market, Oyster Fest, 4th of July Jubilee, and North Country Fair are important social events for the Arcata Community. Families, friends and community members come together in celebration with food, drinks, music, arts and entertainment. Many people gather on the Arcata Plaza to enjoy what the city has to offer.

One thing that is often taken for granted during these events is the amount of waste that is generated. These events generate large amounts of food and non-food waste that is recycled, composted or land filled. Oyster fest, which gets around 18,000 attendees could generate as much as 6,790 pounds of waste (Arcata Bay Oyster Festival)..Processing these wastes takes a lot of energy and resources. Humboldt County's landfill waste is transported an average of 180 miles. Transporting this waste releases CO₂ into the atmosphere through the use of fossil fuels in the transportation process. Once organic waste reaches landfills it releases methane gas into the atmosphere. These emissions make landfills a major contributor to climate change. Landfills not only release greenhouse gases, they also require large amounts of land. Even single-use, recyclable materials are wasteful: if items are recycled, the process of recycling uses resources such as water and energy. Recycled products, specifically plastics, are rarely able to be used for the same product repeatedly. Plastics are at best "down cycled" until eventually they must be land filled (The Recycling Myth).

According to a study, it was reported that on average 27% percent of the waste from special events is paper, 19% food scraps, 18% food soiled paper, 11% plastic, 10% cardboard and 4% is glass (Stop Waste). At the North Country Fair, Zero Waste Humboldt instituted a composting plan which helped to address the largest contributors to the waste stream from events. This included: food waste, paper waste and food-soiled paper. Compostable plastic cups were also available. Much of the waste of the event was able to be diverted to compost and recycling. This helped to address the problem of land filled waste at the North Country Fair, however it failed to address the problem that the waste was being generated in the first place, and the environmental impact from excessive harvesting of natural resources was not taken into account, nor was transportation of the diverted waste. The compost bin, a large dumpster, was to be transported with Humboldt State University's compost all the way to a Sonoma County facility (Gainer), travelling at least 260 miles and contributing approximately 520 lbs of CO₂ to the atmosphere (Equation). The recycling likely went to the solid waste facility in Willits, travelling 140 miles (Humboldt).

Thus, it is important for Event Organizers to think about how waste can be reduced in order to minimize to eliminate harmful environmental impacts. It is both economically and environmentally beneficial for these events to have a waste reduction plan. Reducing land filled waste can help to reduce the costs of transportation and processing. However, a critical element in waste reduction is prevention. Prevention goes a step further than diversion to reducing the consumption of single-use items altogether. Public events, such as the North Country Fair often provide single-use items such as plastic cups, utensils, paper plates, Styrofoam and napkins. All of these things require transportation to a recycling center, composting facility, or a landfill. Recycling or composting items before they are sent to a landfill "grave" is one way to prevent, or

in the case of some recycling, delay, items from reaching a grave. Another, more effective way of reducing the amount of items that go to the “grave” is to reduce the consumption of items that come from the “cradle”. This will reduce the number of items that need to be transported, which will in turn reduce vehicle and landfill emissions. Environmental impacts will also be lessened because fewer products will be created.

Zero Waste Humboldt is a local organization dedicated to the reduction of waste in Humboldt County through zero waste principles. This young organization has currently made steps to implement waste reduction and diversion practices at local events. A pilot study was conducted at the North Country Fair on September 15 and 16. This pilot study was done in order to assess the feasibility and effectiveness of compostable dishware in reducing waste for plaza events. Vendors were encouraged to use compostable dishware, specifically compostable plastic cups. Paper was used for plates. Volunteers were organized to help people in sorting their waste into the proper bins. Three bins were provided: landfill waste, recycling and compost. Zero Waste Humboldt had a booth on the plaza with information about the project and a list of what was compostable and what was not. Volunteers and directors of Zero Waste Humboldt were on site to answer questions and provide surveys for evaluation of the project. By the end of the festival, a five cubic yard dumpster was filled with compostable waste to be transported to a municipal composting facility in Sonoma County (Gainer e-mail). There were some challenges involved with this pilot study, one being that there was not universal compliance from vendors, making some confusion on the part of the festival goers. Certain cups were not compostable while others were. It was attempted to use compostable utensils along with cups and paper plates, however this was not successful. Not all vendors complied with this and all utensils had to

be land filled as a result, utensils being harder to clearly label than cups with respect to their ability to be composted (Gainer).

Learning from the example of other festivals will be very helpful to Zero Waste Humboldt in preceding with a long-term zero waste system for plaza events. All over the United States, counties and cities have adopted various Waste Reduction guidelines for their public events. The Whole Earth Festival at UC Davis is an example of a very successful zero waste event. Zero Waste has been an integral part of the Whole Earth Festival for at least ten years. Vendors are asked to not bring in any outside waste, and they are provided with reusable dishware purchased by Whole Earth Festival. Dishes are washed on-site in the campus' industrial dishwasher. A deposit is used both to incentivize the return of dishware and to compensate for any dishes that are lost. Generally, the deposit for a plate is \$1.00 and the deposit for a cup is \$.50. Oftentimes people will donate their deposit to the festival, both adding funds and ensuring that any lost dishes will be refunded. Vendors, who charged an extra dollar for the plate, then return each dollar to the festival. This has been a slight issue because of all the loose dollar bills floating around the festival, but it has been dealt with somewhat in recent years. As with any change, people will complain: and complaints about the deposits are common. There is an alternative, however, for festival-goers wishing to forego paying a deposit: they can bring their own dishes to use. Despite complaints, it is highly unlikely that a deposit has deterred people from purchasing food at Whole Earth Festival, especially because that deposit is low and fully refundable. When it comes to waste that is produced, there is a procedure that is followed. Volunteers stand near cans for composting and recycling to ensure that people direct their wastes properly. The public is involved in this process as well. When a waste can is filled, there are large tables that are used to empty the cans onto for sorting. Volunteers and anyone interested

participate in sorting through the waste and it is turned into a participatory game. Essentially, they make it fun for people to participate in zero waste, and it is an integral part of the festival, not simply a necessity to be dealt with (Roberts).

Whole Earth Festival and other festivals with Zero Waste policies are models that can be used to help guide the direction Zero Waste heads at Arcata events. Valuable lessons can also be learned from what these festivals have implemented and difficulties they have had. These lessons will aid Zero Waste Humboldt in determining a comprehensive and feasible waste reduction plan.

Goal and Objectives

Goal:

1. Make events on the Arcata Plaza zero-waste

Objectives:

1. Reduce the amount of recycling and landfill waste at Plaza events by 10% by January 2014
2. Reduce the amount of compostable waste at Plaza events by 10% by January 2014
3. Reduce the amount of recycling and landfill waste at Plaza events by 50% by January 2015
4. Reduce the amount of compostable waste from all events going to landfill by 50% by January 2015
5. Reduce the amount of recycling and landfill waste from all events by 90% by January 2020
6. Reduce the amount of compostable waste from all events going to landfill by 100% by January 2020

Weighing Alternatives

1. Zero Waste Humboldt (ZWH) supplies vendors with reusable dishware

Supplying vendors at Plaza events with reusable dishware meets the goal of making plaza events zero waste. Providing reusable dishware will reduce waste produced from disposable, recyclable and compostable dishware, thus contributing to all objectives of reducing landfill waste, recycling and composting. The main strength of this approach is in reducing the amount of waste produced in the first place. Another strength is that as ZWH would provide vendors with the reusable dishware, vendors would save money by not having to purchase their own disposable dishware. Reusable dishware is also more durable than disposable dishware.

There are also several potential weaknesses involved with this approach. One is sanitation issues - ZWH or the organization in charge of the dishes would have to be responsible for ensuring that the reused dishes are sanitary before being re-circulated. Another weakness is the possible loss of reusable dishware by theft, forgetfulness or confusion on the part of event participants. An added obstacle of coordinating dishwashing crews is another drawback to this option, taking extra time and effort. A final drawback to this option is the potential loss of customers based on the unwillingness to pay a deposit for the dishware, should a deposit be required. Since much of the revenue from the purchase of beer at these events goes to local nonprofits this may be a large issue.

The primary monetary cost of this approach is purchasing reusable dishware for the vendors. ZWH will need money in singles and change for the Deposit/Refund system. People will be needed to collect and wash dishes. Dishes must be provided to vendors. A dishwashing station and cleaning supplies are necessary to carrying out this plan. There will also be a small cost continually for soap and other cleaning supplies for the dishwashing crews. It takes time to

purchase reusable dishware, obtain a reliable dishwasher setup. Deposit, collection and refund station set up takes time and resources. Washing dishes, transportation and distribution of clean/dirty dishware to and from vendors will also take time.

2. Permanent composting bins on the plaza

Providing permanent compost bins on the plaza would aid in the goal of reducing waste on the Arcata Plaza. This would meet the objective to reduce the amount of compostables entering the landfill. The strengths of this alternative is that people will always be able to compost their organic waste, including at Plaza events. Since these bins would be present at all times, the public would become accustomed to composting their food waste on the plaza, reducing confusion over time. A weakness is that people may put non-compostables in the bins, requiring sorting to ensure that the composting facility is not contaminated with non-compostables. There is an initial cost of purchasing animal proof composting bins, signs and labels. There is also a cost to collect and empty the bins. It will take time for the city to approve composting bins on the Arcata Plaza, purchase the bins, and to set the bins up on the Plaza. It will also take time each week to collect the organic waste from these bins and create compost. This alternative presents some issues with feasibility because of concern about rodents that are attracted to compost bins. There is also the concern that items will be put into the compost bins so this alternative will not help reduce the amount of non-compostable waste. A final concern with this alternative is rodents, who may be attracted to the compostables thrown in bins if the bins are not emptied regularly.

3. Vendors can only supply compostable dishware

Vendors supplying compostable dishware for the event would aid in meeting the goal of making Plaza events zero waste. It meets the objectives of reducing the amount of recycling and

landfill waste. The cost will incur on the vendors and will depend on the company they purchase the dishware from. Resources that will be needed for this alternative consist of compostable dishware, composting bins for collecting compost waste, labels and signs for the bins and volunteers who will collect and empty the bins. The timeline for this alternative would be based on the time needed for vendors to obtain the reusable dishware, setting up the composting bins, and the transportation and collection of bins to and from their site and disposal area. The strength of this alternative is that it reduces waste and recyclables that need to be transported to a landfill facility. Another strength is that vendors can make a decision on what company they want to purchase their dishware from and how many based on their need. A weakness of this alternative is that people may still use non-compostable or recyclable dishware from outside and dispose of them in compost bins resulting in contamination. Another weakness is that we are still generating compost waste that will need to be transported to a facility for composting. Since there is no local facility, this will likely continue to be the Sonoma facility. Lastly, there could be an inconsistency with the dishware provided by the vendors especially if they purchase them from different companies. Some dishware may not be completely compostable. This alternative may not be feasible since it does not completely reduce the amount of waste that go into compost. Energy is still being used to produce the compostable waste, to transport the waste to the vendors and finally to a facility. It will possibly make it more difficult to have the vendors research and provide the dishware compared to just having ZWH provide them with dishware.

4. Community brings their own reusable dishware

If the community brought their own dishware to events on the Arcata Plaza it would meet the goal to reduce waste produced on the Plaza. It would meet the objective of reducing the amount of recyclables, compostables, and landfill wastes that are produced at events. The

strength of this alternative is that it would prevent the use of recyclable, compostable and land filled materials because people would bring their dishware home with them instead of tossing it in a recyclable, compost, or garbage bin. People would become accustomed to bringing their own dishes and would likely begin to carry them more often. Weakness include sanitation issues, legality of vendors touching items that have been brought in from the outside, and some people may choose not to bring reusable dishware, may not know to bring reusable dishware, or may not be able to bring dishware. The cost would still be on vendors to provide dishware for people who have neglected to bring their own. Another concern would be how vendors will serve customers who did not bring their dishware. They may need to supply compostable dishware for those customers. It would also take time and volunteers to educate the community about bringing their own dishware to events. This alternative does not seem feasible because it would require people that attend events to come prepared with their own dishware. Most people will not want to be responsible for keeping track of their dishes, especially after the dishware has been soiled with foods. This alternative may also not be feasible because of legalities associated with sanitation issues.

Preferred Alternative

Alternative 1- ZWH supplies vendors with reusable dishware

We decided that alternative 1 is the best option for achieving our goal. This option will significantly reduce the amount of recyclable, compostable and land filled waste because reusable dishware will not have to be recycled, composted or land filled thus helping us to meet our objectives. Vendor costs at fairs and festivals will be reduced because they will no longer have to purchase single-use items.

Implementation Strategy

Alternative 1- ZWH supplies vendors with reusable dishware

First we will consult with festival organizers - for the Fourth of July Jubilee, Oyster Festival and the North Country Fair to see what their interest is in the project and register any concerns they may have. We already know that there have been concerns regarding deposits because a portion of the revenue generated at these festivals from the purchase of alcohol is donated to local organizations such as the Redwood Alliance. This is a significant source of income for these organizations, thus any chance of decreasing this income is a serious concern.

Next, we will work with the vendors. Vendors will be consulted as to whether or not they are willing to use the reusable dishes, and this may take some convincing. Once vendors have agreed to participate in supplying reusable dishware to clients, ZWH will need to purchase the reusable dishware. The purchasing of reusable dishware will be accomplished through a grant or through fundraising events.

Our group is also concerned with the health and well-being of the community so we have decided that stainless steel is the best material to be used for reusable dishware. Another material that is used to make reusable dishware is called melamine. Melamine dishware has residues from the manufacturing process that could migrate into foods that come into contact with it. Melamine has been banned from certain countries due to the health concerns associated with this residue. In an effort to protect the health of the community as well as the health of the environment we have decided that purchasing reusable dishware made from stainless steel is our best option. Stainless steel dishware does not have health concerns like plastic reusable dishware has. Because of these concerns, ZWH will likely purchase reusable stainless steel cups from Klean Kanteen. The company from which the reusable plates, bowls and silverware will be purchased is yet to be

determined. One potential issue with the purchase of stainless steel cups is expense. A high cost of stainless steel means that there will have to be a high deposit to ensure the return of the dishes, as much as \$10, which could result in loss of revenue for vendors and, by consequence, the nonprofits that are funded from beer sales.

Once the vendors have agreed to use ZWH reusable dishware, and ZWH has purchased said reusable dishware, the community will need to be informed about the change that will be occurring at Plaza events. We plan to inform the community of the change through a PSA that will be aired on as many radio stations as possible. We will also distribute press releases to local newspapers and ask event coordinators if they will include ZWH information in their advertising. This way many people will have the opportunity to hear the message. There will also need to be volunteers at Plaza events near food and drink vendors to make sure people know that they need to use reusable dishware. These volunteers will make sure people are prepared and informed about the new protocol for ordering food and drinks.

People will pay a deposit to use the reusable dishware. This will encourage people to return the dishware and get their deposit back instead of throwing the dishware away or taking it home with them. We are considering using a token system for reusable dishware. The person would put down a deposit of \$1-10 depending on what ZWH needs to charge to cover the expense of lost dishware, ensure the return of dishware, and based upon the willingness to pay of the public. This willingness to pay will be determined by surveys conducted with the general population of Arcata. After the person pays their deposit they will receive a token. The person will then give the token to the vendor when they order their food and/or drink. When the person finishes their food and/or drink they return the dishware to a dishwashing station. The dishwashing station then will give the person a token or their deposit after the dishware has been

received. Tokens can then be used to receive reusable dishware again if they want more food and/or drinks. If the person no longer has a need for reusable dishware their deposit will be returned to them. If they choose to donate the deposit, the token will enter them into a drawing where they can win products that contribute to meeting our goal of reducing that amount of single-use products consumed. These products include items such as reusable water bottles, thermoses, cups, and dishware.

Timeline

November 2012

Week 1

- Holly- Contact Whole Earth Festival
- Maria- Contact Michael Welch and set up a meeting
- Diana- Contact CA Public Health and Regulation

Week 2

- All group members- Talk to the beer vendor at North Country Fair (NCF). Find out what their thoughts are and alleviate any of their concerns (See Appendices C for Event Questions)
- Maria- Create a Letter of Intent informing food and drink vendors of ZWH's plan to reduce landfill waste by providing stainless steel cups (See Appendices D for Letter of Intent)

January 2013

Week 1

- Group: Meet with Cory Collins from Klean Kanteen

Week 3

- Diana- Provide vendors at NCF with ZWH's Letter of Intent

February 2013

Week 1

- All group members- Fundraiser to raise money for ZWH's stainless steel cups

Week 2

- Holly- Research for grant if additional funding is needed
- Maria- Write a grant for additional funding

May 2013

Week 1

- ZWH purchases stainless steel cups

August 2013

Week 4

- ZWH- Train and educate volunteers on taking money and giving tokens. Taking cups back from the community and either a giving token back or giving their deposit back. Used cups must then be taken to the dishwasher and then returned to vendors.

September 2013

Week 2

- ZWH- Stainless steel cup pilot study where we use the new system at the NCF

Week 3

- ZWH- Evaluation of the pilot study

Week 4

- ZWH- If successful get vendors at all festivals to agree to use stainless steel cups

November 2013

Week 1

- ZWH- Evaluate and decide if reusable tableware is a viable permanent solution

Monitoring and Evaluation

The initial monitoring that will be done is for the pilot study, to be implemented at the North Country Fair in 2013. At this pilot study, beer vendors will be given reusable cups instead of the common disposable cups. A deposit will be required for the use of these cups, which will be returned upon the return of the cup. If the pilot study is successful, the framework of the study will be followed for later events. Monitoring will be needed during the event to ensure that people understand that the pilot study is happening and what they can do to help ensure its success. There will be public relations coordination, in the form of volunteers, signs and prior PR (as part of the promotion for the NCF) to help ensure understanding and ensure that people return their cups.

- Success will be determined by:
 - Waste diverted, by comparing this year's waste production with previous years
 - Ease of implementation
 - Willingness of participation by festival attendees
 - Vendor compliance with zero waste
 - Public understanding of zero waste and how they need to participate
 - Return rate of dishes - will determine the success of the deposit
 - Cooperation and enthusiasm of festival-goers

- Conducting a survey

ZWH will have volunteers and signs at the events making sure people are aware of what Zero Waste is and how the current system works to divert and eliminate waste. ZWH will keep track of the number of tokens that are given out at each event. The number of tokens will signify the number of items that have been diverted from recycling, composting, or land filled waste. ZWH will also keep track of the amount of recyclable, compostable and landfill waste that is produced and compare to previous years. If the implementation is effective, each year the amount of waste that is recycled, composted and land filled will be decreasing. Also to be monitored is the effectiveness of public relations (signs, volunteers, etc.), on public understanding and acceptance of the new system. This will be determined through surveys and observation. ZWH will also monitor for areas that need improvement for future events.

The effectiveness of the reusable dishware will be monitored with the following criteria:

- Which festival is being monitored?
- Number of people and the percentage of people who used the reusable dishware provided
- Number of vendors and the percentage of vendors supplying reusable dishware
- What is the rate of return of the reusable dishware?
- Compared to the previous year, how much waste was produced at the festival? Was it less? By how much?

Survey on overall customer satisfaction with reusable dishware will include the following questions:

- What do you think of this system?
- How do you feel about the deposit and refund system specifically?
- Do you think that the price of the deposit is appropriate? Too high? Too low?

- Would you like to see this system in place for the next large event?
- What would you change about it?
- What do you like about it?
- Please list any other concerns you have with this system.

Analysis of event waste produced

- Amount of total waste generated (in tons)
- Amount of waste diverted- amount of compost and recyclables
- Find percentages of landfill, organic waste and recyclables
- Amount of total waste generated in previous years
- Amount of waste diverted in previous years
- Comparison of this year's waste (in all forms - landfill, compost, recycling) with previous years

Survey on the event

- Level of alcohol consumption this year compared to previous years
- Does it seem that the deposit had an impact on alcohol purchase?
- Amount of revenue generated by the event which goes towards the Non-profit organizations before and after implementation of the system.
- Did the event lose or gain money by changing the system or did it stay the same?
- Did the non-profit organizations lose or gain money from this system?

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Equation:

10 mpg Dump truck mileage, 20 lbs CO₂ per gallon (How), 260 miles to Sonoma (Google Maps) = 520 lbs CO₂

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Appendices A-E

A. Brainstormed Solutions

- Dishwashing stations at farmers market
- Composting bins at farmers market
- Reduce what is consumed in the first place
- Permanent composting bins on the plaza
- Vendors use compostable dishware
- Vendors use reusable dishware
- Get rid of garbage cans (long term goal)
- Put up signs on bins
- Make a compost area within Arcata
- Have people bring their own dishware/ tupperware
- Use reusable tableware, cups, napkins
- Reduce single-use/non-recyclable items
- Use reusable tableware, cups, napkins
- Smaller portions of food
- Reduce the use of single-use items
- Get 10% of vendors to provide reusable and compostable, tableware, cups, etc.
- 50% of vendors for the North Country fair agree to use reusable dishware
- Arcata City Council agrees to allow compost bins on plaza
- Reduce the use of single-use dishware by vendors by 50% by December 10, 2012
- Anything that is not reusable should be compostable
- No water or soda bottles- have fountain drinks instead
- Get rid of vendors
- Have local farmers provide everything (long term)
- Source all products locally (long term)
- Make all dishware at the events
- Eat out of your hat
- Bring take-home dishware
- Give away free reusable dishware in raffles/drawings
- Bringing your own dishes incorporates you into a drawing
- Volunteering incorporates you into a drawing
- Excess food is dropped off at a scrap table that anyone can come and snack on
- All extra vendor food is given to the homeless/needy population, or at least not wasted
- All compost stays local to Humboldt county
- Make trick garbage cans that spit trash back at you if you try to throw it in
- Make a sound effect on the garbage can that scares people into not creating trash
- Make all plastic cups and forks very uncomfortable to hold
- Have people hired to direct the flow of waste
- Cradle-to-cradle information, have people actively participate in understanding cyclical products - if they want to use it, understand how it is made, make it themselves even and reuse. If it is wasted, then make unmake and remake... possibly a separate festival
- Remove the concept of "waste"
- There is no such thing as waste

- Have food buffet-style so people will only take what they want, no more
- Bring your own bottles if you want a drink
- Cups and water provided to reuse
- Deposit for dishware
- Wash crew cleans dishes - volunteers
- Encourage kids to gather plates - make it a game
- Make it fun to reduce waste, to stop the concept
- Have plates that people can decorate themselves for the event so they are valued
- Have a day where people can come to the plaza and decorate dishware for plaza events so they have more value to the community
- Personalize the experience of zero waste
- Everyone is involved in the process...
- Possible goal: 10% or more of ATTENDEES at the festival are volunteers
- Events should be communal experiences, we have worked together to make this happen
- Have the dishes sourced locally
- Have dish-returning stations on two corners of plaza
- Make sure that there are enough volunteers so that people stay enthusiastic
- Have special something for volunteers to encourage volunteering
- Separate event to inform on zero waste and encourage people to participate in the future to make the plaza a zero-waste place
- Have a designation of the plaza as a zero-waste location - does that designation even exist? City council?
- Have bins on the plaza have a sticker that has ZWH info on it so people can volunteer

B. Top 10 Solutions

- Vendors use reusable dishware
- Deposit for dishware
- Dishwashing stations at farmers market
- Wash crew cleans dishes - volunteers
- Have dish-returning stations on two corners of plaza
- Permanent composting bins on the plaza
- Have bins on the plaza have a sticker that has ZWH info on it so people can volunteer
- Vendors can only supply compostable dishware
- Separate event to inform on zero waste and encourage people to participate in the future to make the plaza a zero-waste place
- People bring their own dishware

C. Questions for Event Coordinators

- Do you have any concerns about making Arcata Plaza events zero waste?
 - What are these concerns?
- We are planning a reusable cup pilot study at an Arcata Plaza event, if the pilot study is successful would your event consider providing reusable cups?

- Would your event consider hosting our pilot study?
- Do you have concerns about using stainless steel cups?
 - What are these concerns?
- What might you suggest to mitigate these concerns?
- What are your thoughts using a deposit system to ensure reusable dishware is returned?
- Who are the vendors and organizations involved in your event?
- Do you have any suggestions for what we can do to make Arcata Plaza events zero waste?
 - How can expedite the process or make it smoother?
- Would you be interested in coming with us to meet with APD to help address their concerns about safety?

D. ZWH Letters of Intent

Letter #1

To Whom it May Concern,

Zero Waste Humboldt (ZWH) would like to make events on the plaza into Zero Waste Events. In 2013 ZWH would like to try something they have not done before. ZWH wants to purchase stainless steel cups for events on the plaza. ZWH plans to have the North Country Fair host the pilot study. ZWH will provide vendors with a certain number of stainless steel cups based on their historic needs. ZWH will have a station with tokens. People will bring a deposit to the token station to receive their token. When the person orders a drink at a vending station they give the vendor their token with their money. The person then will receive their drink in a stainless steel cup. After they finish the drink, they return the cup to the token/dishwashing station and can either receive their deposit or a token so they can repeat the process. The cups will then be washed. ZWH is looking for a business on the plaza that would be interested in working with ZWH. The business must have an industrial dishwasher and must be willing to accept the cups from a ZWH volunteer. Once the cups are finished washing either the business will deliver the cups to the ZWH token station where the cups will be taken by ZWH volunteers and redistributed back to vendors.

Thank you.

Sincerely,

Zero Waste Humboldt

Letter #2

Event Protocol Letter to Vendors

Dear Vendor,

Thank you for your participation in Zero Waste Event Pilot Study for this year's North Country Fair. The Zero Waste Humboldt committee is counting on you to make this event a success. We appreciate your efforts in helping us make this event zero waste. Events like the NCF generate large amounts of waste and we ask that you support our waste reduction efforts by reviewing our reduction guidelines.

- Reusable steel pint cups will be provided by the ZWH for beer and other drinks sold
- ZWH staff and volunteers will be on site at the event to assist vendors with the reusable cup collection and distribution
- Well-marked bins will be available to both vendors and attendees.
- Please provide compostable dishware rather than disposable
- Provide fountain drinks rather than soda cans
- Buy in bulk to avoid waste from individual packaging
- Sort items for collection: glass, metal, aluminum, paper, and plastic
- Also use compost bins for food, food-soiled paper products and compostable waste
- Please refrain from distributing non-compostable dishware made of plastic and Styrofoam as well as individually wrapped condiments.

Please let us know if you have any questions. Again, thank you and we look forward to seeing you at the North Country Fair!

Sincerely,

Zero Waste Humboldt

E. Timesheets of Group Members

ENVS 410 Timesheet for Maria Bertagnolli		
Date	Description	# of Hours
9/5/2012	Group meeting. Met with Morgan King. Research	2
9/6/2012	Creating and updating GoogleDoc	1
9/7/2012	Group meeting. Updating GoogleDoc	1
9/10/2012	Group meeting. Research	1
9/12/2012	Group meeting. Research	2
9/17/2012	Group meeting. Research	2
9/19/2012	Group meeting. Research	2
9/24/2012	Meeting with Maggie	2.5
9/26/2012	Group meeting. Research. Updating GoogleDoc	4
9/27/2012	Research. Updating GoogleDoc	2
10/1/2012	Group meeting	2
10/3/2012	Group meeting. Brainstorming	2
10/7/2012	Updating GoogleDoc	0.5
10/8/2012	Group meeting. Brainstorming. GoogleDoc	2
10/10/2012	Group meeting. Updating GoogleDoc	2.5
10/15/2012	Group meeting. Weighing alternatives	3
10/17/2012	Meeting with Maggie. Weighing alternatives	2
10/20/2012	Research. Updating GoogleDoc	2
10/21/2012	Updating GoogleDoc	1
10/22/2012	Group meeeting. Research	2
10/24/2012	Group meeeting. Research	2
10/26/2012	Research	2
10/29/2012	Group meeeting. Research	3
10/31/2012	Group meeeting. Research	2
11/1/2012	Research. Klean Kanteen	1.5
11/2/2012	Group meeeting. Research	2
11/4/2012	Research	2
11/5/2012	Meeting with Maggie. Research	4
11/6/2012	Scheduled meeting with Michael Welch	0.5
11/7/2012	Updating GoogleDoc	2
11/8/2012	Coresponding with Michael Welch	0.5
11/11/2012	Updating GoogleDoc	3
11/12/2012	Group Meeting	3
11/14/2012	Group Meeting. Meeting with Michael Welch	3
11/26/2012	Group Meeting. Begin PPP	3
11/28/2012	Group Meeting	2

12/5/2012	PPP and GoogleDoc	2
12/6/2012	Editing and Formatting GoogleDoc to WordDoc	2
12/7/2012	Group Meeting. Practice PPP	2
Total		80

Holly Johnston

Date	Start	End	Time Spent (minutes)	What we did
9/5/2012	12:00:00	2:00:00	120	Organized into groups, discussed plan of action, met with Morgan King
9/7/2012	12:00:00	2:00:00	120	Discussed project, problems
9/10/2012	11:00:00	1:00:00	120	Discussed project, made appointment with Morgan
9/12/2012	11:00:00	1:00:00	120	Met with Morgan King, Discussed options for project
9/16/2012	2:00:00	7:00:00	300	Volunteered at NCF for ZWH
9/17/2012	11:00:00	1:00:00	120	Research
9/18/2012	8:00:00	9:00:00	60	Research, options for zero waste
9/19/2012	11:00:00	12:50:00	110	Research, met with Morgan again
9/24/2012	11:00:00	2:00:00	180	Research, Met with Maggie at Beachcomber
9/24/2012	5:00:00	6:30:00	90	Research
9/26/2012	11:00:00	12:50:00	110	Research
9/29/2012	7:30:00	8:30:00	60	Work on Problem Statement, research
10/3/2012	11:00:00	12:50:00	110	Research, Goals and Objectives, brainstorm
10/8/2012	11:00:00	1:15:00	125	Research, brainstorm solutions
10/10/2012	11:00:00	12:50:00	110	Brainstorm solutions
10/17/2012	10:30:00	12:50:00	140	Met with Maggie at Couple Cups, discussed project
10/22/2012	11:00:00	12:50:00	110	Research
10/29/2012	11:30:00	12:50:00	80	Research
10/30/2012	11:00:00	12:50:00	110	Research
11/2/2012	11:00:00	1:10:00	130	Research
11/5/2012	11:00:00	3:00:00	240	research, interview with Maggie at Cafe Mokka
11/7/2012	10:00:00	11:30:00	90	Interview with Willie, research
11/7/2012	11:00:00	12:50:00	110	Research, Work on papers
11/10/2012	9:00:00	10:00:00	60	Research, Work on papers
11/12/2012	3:00:00	5:00:00	120	Research, work on papers, determine plan of action
11/14/2012	10:00:00	12:50:00	170	Met, discussed and met with Michael Welch

11/14/2012	8:00:00	9:00:00	60	Work on final paper
11/17/2012	1:00:00	2:30:00	90	Compiling information, work on final paper
11/26/2012	11:00:00	1:00:00	120	Work on final paper
11/28/2012	11:00:00	1:00:00	120	Work on Presentation
11/29/2012	11:00:00	1:50:00	170	Work on final paper
12/6/2012	11:30:00	11:50:00	20	Work on timesheet
12/6/2012	4:00:00	5:30:00	90	Work on final paper, presentation
12/6/2012	10:00:00	12:00:00	120	Work on final paper, cup comparison
12/7/2012	10:00:00	2:00:00	240	Work on presentation, cup comparison
Total			4245	70.75 Hours

Diana Magus

Date	Start	End	Hours	Activity
9/5/2012	11:00 AM	1:00 PM	2:00:00	Set up group
9/5/2012	12:50 PM	1:50 PM	1:00:00	meet w/ group,
9/7/2012	12:00 PM	12:10 PM	0:10:00	Call Maggie
9/7/2012	12:00 PM	2:00 PM	2:00:00	lunch w/ group,
9/7/2012	4:00 PM	5:45 PM	1:45:00	research Zero Waste
9/10/2012	11:00 AM	12:30 PM	1:30:00	meet with group
9/11/2012	4:00 PM	5:00 PM	1:00:00	ZWH training with
9/12/2012	12:30 PM	1:00 PM	0:30:00	meet with Morgan &
9/19/2012	11:00 AM	1:00 PM	2:00:00	research in Lab, Met
9/16/2012	2:00 PM	5:00 PM	3:00:00	NCF
9/17/2012	9:00 PM	11:30 PM	2:30:00	Research Zero Waste
9/24/2012	11:00 AM	1:50 PM	2:50:00	Meet with Maggie
9/24/2012	3:00 PM	4:50 PM	1:50:00	Research Whole
9/26/2012	11:00 AM	1:00 PM	2:00:00	work at Lab
9/26/2012	9:00 PM	10:00 PM	1:00:00	work on problem
9/30/2012	9:30 PM	11:00 PM	1:30:00	work on problem
10/1/2012	11:00 AM	1:00 PM	2:00:00	Research in Lab
10/3/2012	9:00 PM	10:30 PM	1:30:00	Research goals and
10/8/2012	2:00 PM	3:00 PM	1:00:00	Looking over goals
10/10/2012	11:30 AM	2:00 PM	2:30:00	Brainstorming
10/15/2012	11:00 AM	12:30 PM	1:30:00	Labs
10/17/2012	10:30 AM	12:50 PM	2:20:00	Met with Maggie
10/22/2012	11:00 AM	12:50 PM	1:50:00	Research
10/24/2012	11:15 AM	1:00 PM	1:45:00	Research
10/29/2012	11:00 AM	12:50 PM	1:50:00	Research
10/30/2012	2:30 PM	4:50 PM	2:20:00	Research Alternatives
10/31/2012	11:00 AM	1:50 PM	2:50:00	Research in lab
11/2/2012	11:00 AM	1:00 PM	2:00:00	meet with group in
11/5/2012	11:00 AM	12:00 PM	1:00:00	Research
11/5/2012	12:00 PM	3:00 PM	3:00:00	Met with Maggie
11/7/2012	11:00 AM	1:00 PM	2:00:00	Work on Papers
11/8/2012	3:00 PM	3:15 PM	0:15:00	Call Humboldt Dept
11/11/2012	9:00 PM	11:30 PM	2:30:00	work on paper
11/12/2012	3:00 PM	5:00 PM	2:00:00	Research, work on
11/14/2012	10:00 AM	12:50 PM	2:50:00	meet with Michael
11/20/2012	9:00 PM	10:40 PM	1:40:00	Research on Univ
11/26/2012	11:00 AM	1:00 PM	2:00:00	Work on Final
11/28/2012	11:00 AM	1:00 PM	2:00:00	Work on powerpoint
11/30/2012	7:00 PM	9:00 PM	2:00:00	work on paper,
12/6/2012	9:50 PM	11:56 PM	2:06:00	Work on Final
11/7/2012	10:00 AM	11:20 AM	1:20:00	work on Timesheet
12/7/2012	12:00 PM	2:00 PM	2:00:00	Work on Final Paper,
			76:41:00	TOTAL HOURS