

## **Water Bottle Refill Stations at Tulane University**

September 17, 2015

By Colleen Large

In Fall 2013, students in Prof. Keith Silverman's course in Environmental Ethics raised funds for the installation of a pilot water bottle refill station. As an intern at the Office of Sustainability, I researched the possible models and locations for the station, as well as the process for installing them on campus. Two stations were installed in Howard Tilton Memorial Library in early 2014. In this report I share my findings in order to assist future installations.

### **I. Environmental Problems Associated with Plastic Bottles**

Water bottle refilling stations are a practical means to reduce Tulane's total waste output. Disposable water bottles are sold at locations around campus including the LBC, Le Gourmet, Bruff to Go, the Drawing Board and in vending machines around campus. While these Dasani water bottles are labeled "plant bottles", they are still made of PET plastic that is neither biodegradable nor compostable. According to the EPA, only 29% of PET plastic bottles are recycled in America (EPA, "Plastics"). Plastics like disposable water bottles also contribute to pollution in our oceans. This contributes to the Pacific Gyre, a garbage-filled area in the Pacific Ocean that is two times the size of Texas and made up of mostly plastics (Huff Post). In addition, the making of these plant bottles still requires petroleum and water, both of which can be reduced if people opt for tap water.

### **II. Public Health Perspective**

Consuming water from disposable plastic bottles may have health impacts due to estrogenic compounds, endocrine disruptors that "mimic or antagonize the actions of naturally occurring estrogens", leaching into drinking water (<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3222987/>). A conclusion has not been reached as to when estrogenic compounds are leached, however some studies have suggested that this occurs when bottled water is stored for long periods of time or is exposed to higher temperatures (<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2854718/>).

Bottled water is regulated as a food by the United States Food and Drug Administration. Bottlers are therefore not required to release their source nor any treatment or contamination. The municipal water in Orleans parish, on the other hand, is regulated to a higher standard that is open to public viewing. The issues that have arisen about New Orleans drinking water such as the presence of lead in homes' tap water and metals in schools' drinking fountains are all problems of secondary contamination, not the water source itself. The Orleans Parish drinking water is documented to be safe, as it is free of heavy metals and pathogens due to the distribution system's passivation layer, a protective coating that prevents metals from dissolving into the water supply.

### **III. 2013 Pilot Station Installation**

#### **a. Model Varieties**

In deciding on the best water bottle refilling station to suit Tulane's campus, I compared several different brands including Brita, Elkay, Oasis, and Halsey Taylor and within those companies compared different models.

Brita offers bottle refilling stations in models that are either recessed in a wall or mounted on the surface of a solid wall. These models do not have the option to be mounted on top of any water fountain, but rather are only the bottle filling unit. This could be an advantage for locations that have smaller space because it is the smallest model out the compared models in this report. This station only requires an electrical unit and water supply. Unlike the other brands, with Brita stations a dish can be used to catch excess water so a drain tap is not required. All Brita units are hands free and have a filter that needs to be replaced every 2,500 gallons of water. The fountain will stop working when a new filter is needed so the drinking water is assured to be safe and no secondary contamination occurs. New filters cost \$90 and an employee will need to consistently check and replace this for the station to be consistently functioning. A chiller can be added at any time for an additional \$1,020. These models will filter water to remove any odor or taste without running the risk of a dirty filter causing secondary contamination.

Oasis offers water bottle refilling stations in the Aqua Pointe model which is recessed in a wall on its own or next to a water fountain and in the Versafiller model which is a wall mount on an existing water fountain. These fountains can be installed with or without filters and come with a refrigeration system. The Reilly Center has an Aqua Pointe water bottle refilling station in the second floor weight room.

Elkay bottle refilling stations have several potential models that would be suitable for Tulane's campus. A benefit to the Elkay refilling station is that the indoor stations have "green tickers" which lets the user know the number of 16 oz bottles saved from landfills. This gives the user immediate information of their positive impact on the environment by informing them of the waste they are avoiding. Models can come in either a filtered or unfiltered version, with filters lasting 3,000 gallons. A chiller is optional. The plastic around the dispensing area is integrated with Silver Ion Anti-microbial that's purpose is to stop common bacteria, molds, and fungi from growing. These bottle refilling stations can come as retro-fit models which are installed on already existing Elkay water fountains around campus.

Dr. Maureen Litchveld, the chair of Environmental Policy and professor in the Department of Global Environmental Health Sciences, advised that Tulane install a water bottle refilling station that is touch-free and filterless. She explained in her report on New Orleans drinking water that many filters will remove chemicals such as MTBE which can be found in drinking water from groundwater whereas Orleans Parish drinking water comes from the Mississippi River. Filters also can be more of a health hazard when not routinely changed because a biofilm may form which holds algae, fungi, and pathogens

that release toxins into drinking water. Dr. Litchveld recommended the Elkay Retro Fit Filterless Model as a suitable bottle refilling station for our campus.

I concluded that Elkay bottle refilling stations are the best products suited for our campus. The “green tickers” exemplify the purpose of the station to the user, besides it simply being convenient. In addition, Elkay water fountains already exist in potential locations of installment such as the library second and third floor. If one brand were to be installed for all locations on campus, the Elkay would be a good fit because retro fit models could be added to existing water fountains.

Model Selected: Elkay- EZH2O COOLER KIT | EZS8WSLK (No filter)

[http://www.elkayusa.com/cps/rde/xchg/elkay/hs.xsl/elkay-search-results.aspx?search=\\*WSLK\\*&brand=Elkay&commercial=false&searchbutton.x=6&searchbutton.y=7](http://www.elkayusa.com/cps/rde/xchg/elkay/hs.xsl/elkay-search-results.aspx?search=*WSLK*&brand=Elkay&commercial=false&searchbutton.x=6&searchbutton.y=7)

#### **b. Selecting Locations**

In the process of selecting a location for the project, two main considerations were locating high traffic areas and locating existing fountains (to be replaced or retrofitted). The Howard Tilton library best fit these criteria.

Outdoor water refill stations were also considered. Upon presenting these options to Facilities Services, advised against these options because they would involve significantly higher installation costs, given installation would require adding piping and cutting concrete slabs.

#### **c. Cost**

Facilities Services first provided an estimate of the cost of replacing an existing drinking fountain with the Water Bottle Refill station \$4758.60. The estimate included construction costs (\$1200), plumbing and the purchase of the station (\$3000.00) and contingency and architectural and engineering fees. For unknown reasons, Facilities Services ultimately billed the sponsoring departments \$4758, but installed two stations in two different locations, the 3<sup>rd</sup> and 4<sup>th</sup> floor elevator lobbies of Howard Tilton Memorial Library.

#### **d. Current Status**

Since their installation in Fall 2013, the two water bottle refill stations in the library have helped to avoid over 57,000 disposable plastic bottles from being used according to the “green tickers”.

### **IV. Process for Future Stations**

There are currently water bottle refill stations installed in the Howard Tilton Library, LBC basement, and Reily Recreation center.

#### **a. Planning Process**

- 1) Identify locations (cheaper options are locations that replace existing or retrofit fountains).

- 2) If there are feasibility questions, consult Facility Services.
- 3) Talk with building “owner.” For example, HRL should be involved in any project in a residence hall.
- 4) Request estimate from Facility Services. For the procedure, see the “Special Services” page on the Facilities Services website:  
[http://tulane.edu/facilities/uptown/specialservices.cfm#CP\\_JUMP\\_225093](http://tulane.edu/facilities/uptown/specialservices.cfm#CP_JUMP_225093)
- 5) Identify funding.
- 6) Submit job order to Facility Services. Very similar process to requesting estimate, but you must include information on the Tulane accounts that will pay for the project.

### Works Cited

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DATE: 11/18/13

ESTIMATE REQUESTED BY: Colleen Large and Liz Davey

TYPE: Construction

LOCATION: Howard Tilton Memorial Library 2nd Floor or 3rd Floor

**ABBREVIATIONS:**

|                    |         |                  |       |
|--------------------|---------|------------------|-------|
| Carpentry          | (C)     | Machine Shop     | (MS)  |
| Contractor         | (Contr) | Painting         | (Pt)  |
| Custodial Services | (CS)    | Plumbing         | (Pb)  |
| Electrical         | (E)     | Refregeration    | (Ref) |
| Instrument         | (I)     | Sheetmetal       | (SM)  |
| Key Shop           | (KS)    | Support Services | (SS)  |
| Life Safety        | (LS)    |                  |       |

| <u>WORK DESCRIPTION</u>  | <u>COST</u>       |
|--|-------------------|
| 1. Construction Work (C) Demo and repairs to the wall                    | \$1,200.00        |
| 2. Plumbing Work (\$1544 Bottle Station - MSLP + Pb Materials and Labor) | \$3,000.00        |
| <br>   |                   |
| Total  | \$4,200.00        |
| Contingency (10%)  | \$420.00          |
| Total plus contingency   | \$4,620.00        |
| A&E Fees (3%)  | \$138.60          |
| <b>Total plus contingency plus A&amp;E Fees</b>                          | <b>\$4,758.60</b> |

Exclusions: Unknown conditions in floors, walls and ceilings.

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