CONCLUSIONS

Since experiments were not performed, it remains up to the customer to perform comparison testing. The task would be to spend less than 3 to 5 gallons of water per one load. This load could be approximately 6 complete serving sets (12 big plates, 6 small plates, 6 coffee cups with plates, 6 glasses, together with accompanying silverware), and additional space for at least 8 pieces of serving dishes, including bowls. The size of the load varies, as can be seen in Fig. 5. According to Fig.5, one load can contain 24 big plates, 25 small plates, 12 coffee cups and 12 glasses.

In order for this comparison to be competent, the result must be statistically significant. This means that a large enough number of participants with different dishwashing skills has to be included and appropriate statistical analysis performed.

By consulting several persons, and according to personal experience and estimations, it seems unlikely that washing dishes out of a dishwashing machine can lead to smaller water consumption. Limiting factors with the Dishmaster® is that water has to run all the time. Even detergent has to be applied with running water. As our survey shows, only persons who could spend less water are those with very economic ways of washing: they apply detergent on the sponge, and stack washed dishes in the compartment with a small amount of water in it to dilute remaining detergent so a very small amount of fresh water is needed for final rinsing. Some do not even stack soaped dishes in the water, but just rinse it quickly at the end. It should be noted that these measurements were done with the purpose to compete with dishwashing machines, so those persons did their best to spend less water as much as possible.

Dishwashing machines have other negative aspects that have not been considered. One of them is that they use heavy detergents in order to consume less water. On the other hand the detergent used by the Dishmaster® is quite diluted (1 table spoons in 16 ounces of water) and is biodegradable, with no phosphates, enzymes, or citrus additives. **Also, end-of-life of dishwashers is not considered, i.e. problems with their disposing, recycling, permanent waste.** One should perform more detailed analysis to determine does savings in energy and water overweight negative ecological aspects. **It is possible that dishwashing machines might leave a greater "ecological footprint" than other methods of dishwashing.**

Table 1 shows energy and water usage and cost comparisons for both the automatic dishwasher and the Dishmaster® faucet system. **From this table, it is evident that handwashing uses much less energy as expected.** This table assumes that the Dishmaster® system uses 5 gallons of water heated from 52 to 107 ºF – assumptions from SilverStream. It is difficult to compare the environmental impacts of energy usage to water usage; therefore, it is recommended that both Energy Star limits for energy usage and water usage be met by the Dishmaster® system.

Table 1. Energy and water usage comparison.

	Energy Usage	Water Usage	Energy Cost
Automatic Dishwasher Via Energy Star	1.5 kWh	5 gallons	$0.13
Handwashing	0.675 kWh [1]	5 gallons [2]	$0.05

[1] Assumes that handwashing with the Dishmaster takes 5 gallons of water heated from 52 ºF to 107 ºF.
[2] Assumes that handwashing with the Dishmaster takes 5 gallons of water.