

CITY OF SANTA BARBARA WATERFRONT DEPARTMENT

MEMORANDUM

Date: February 20, 2014
To: Harbor Commission
From: Scott Riedman, Waterfront Director
Subject: **Water Wise Survey**

RECOMMENDATION:

That Harbor Commission receive and review a report on the Water Wise Survey prepared by the City's Water Conservation Program.

DISCUSSION:

A Water Wise Survey of the Waterfront was performed in May of 2013 by the Public Works Department's Water Conservation Program (WC Program). The purpose of the survey was to identify ways in which the Waterfront could save water and save money on its water and sewer bills.

WC Program staff visited all facilities operated by the Waterfront such as the restrooms, marinas, and multi-tenant buildings. They measured flow rates and volumes of a variety of fixtures. Staff made observations of typical water usage such as slip holders washing their boats. Based on these measurements and observations, staff was able to determine if modifications or adjustments could be made to reduce water usage. Staff identified eight conservation opportunities for Waterfront Facilities.

1. Adjust flush valve toilets to proper flow rate: 38 toilets were evaluated during the survey with only nine using the proper volume of 1.6 gallons per flush (gpf). Flush valve diaphragms can be adjusted to flow rates of between 1.3 and 1.6 gpf. Proper adjustment could save up to 788 gallons per day (gpd).
2. Install lavatory aerators: All faucets measured at the Waterfront had average flow rates of 1.5 gallons per minute (gpm). Aerators can be installed reducing the flow rate to 0.5 gpm. This could potentially reduce water usage by 4,500 gpd.
3. Replace showerheads: Four marina restrooms have showers available for slipholders. The average flow rate was 3.3 gpm per showerhead. It is recommended that all showerheads be replaced to reduce flow rates to 1.5 gpm. This could potentially reduce water usage by 900 gpd.
4. Replace urinals with waterless urinals: Some of the Waterfront restrooms have waterless urinals. 11 conventional urinals remain with an average flow rate of 1.7 gpf. These could be replaced saving approximately 1,063 gpd.

5. Repair leaking pressure assisted toilets: This could potentially reduce water usage by 100 gpd.
6. Repair leaking showerheads and diverter valves: This could potentially save 528 gpd.
7. Install hose end shut off nozzles: There are over 1100 slips in the marinas and each has a fresh water faucet available. If each hose had a shut off nozzle, water usage could potentially be reduced by 1,496 gpd.
8. Convert restrooms to recycled water for toilet flushing: This recommendation could be done in concert with remodeling of marina restrooms 2 and 4 if the recycled water distribution system is accessible. Remodeling of Marinas 2 and 4 restrooms is included in the Waterfront's 6-year CIP. The feasibility of plumbing these restrooms with recycled water will be considered during design.

WC Program staff reviewed the Waterfront's 21 potable water meters and determined that use averages 34,356 gpd. If all of the water conservation recommendations are implemented and provide the predicted reductions, water usage could be reduced by as much as 9,375 gpd (27%). The Waterfront budgets approximately \$155,000 per year for water. The proposed water conservation recommendations could reduce the Waterfront's annual water bill by \$41,465.

Implementation

Waterfront and WC Program staff met in the fall to discuss the survey and their recommendations. Several issues need to be considered prior to implementation of the water conservation recommendations. Although the WC Program may be able to secure as much as \$3,500 in incentives as well as supplying some of the material, there may be other significant costs. Many of the recommendations can be carried out by Facilities staff taking into consideration their existing workload. Furthermore, some of the recommendations may save water but come at the expense of increased maintenance.

Waterfront staff will prepare an implementation plan that will identify and prioritize the most feasible recommendations for each facility. Implementation will begin as soon as practicable especially considering the drought conditions and recommended reductions in water usage. Facilities and WC Program staff will work together to monitor the efficacy of the recommendations quantifying the reduction in water use and corresponding reduction in utility costs.

Attachment: Water Wise Survey Results

Prepared by: Karl Treiberg, Waterfront Facilities Manager



Waterfront Water Wise Survey Results

City of Santa Barbara Water Wise Survey & Incentive Program

RECOMMENDATIONS

- Flush Valve Toilets:** 75% of toilets tested use more water than they should. Adjust valve diaphragms to achieve proper flow rates and potentially save >1,000 gpd.
- Aerators:** Install aerators on all lavatory faucets. Installing 0.5 gpm aerators will save an estimated 4,500 gallons of water per day.



- Showerheads:** Replace 15 showerheads with new 1.5 gpm heads and save over \$4,000 per year with this simple replacement project.
- Urinals:** Save over 1,000 gallons per day by switching 11 urinals to waterless urinals, and see annual utility expenses drop another \$4,000.
- Hose-end Spray Nozzles:** Save 70 gallons per ten minute boat rinse. 100 ten minute rinses save 7,000 gallons!
- Repairs:** Repair leaking showerheads and diverter valves.

Water Savings 27%

Equipment Cost \$7,000

Annual Cost Savings \$41,465

Payback Period 5 Months

ADDITIONAL RECOMMENDATIONS

- Convert restrooms to recycled water for toilet flushing.
- Research replacing high volume toilets on Marina 1 and 2.



OTHER NOTES

- Annual cost savings include reductions in City Sewer charges and energy consumption by water heating equipment. Payback includes labor costs, does not include City incentive funds.
- See reverse for City incentive funds available to help offset initial installation costs.

Annual Savings and Paybacks for the Waterfront

	Annual Water, Energy & Sewer Bill Savings (\$/year)	Total Estimated Water Savings (gal/day)	Total Cost of Project (incl. labor)	Payback (Months)	City Incentive Funds Available
1. Adjust FV toilets to proper listed flow rate	\$3,101	788 gpd	\$4,200	16.3	\$600
2. Install lavatory aerators with max flow of .5	\$22,654	4,500 gpd	\$1,080	0.6	City provides
3. Replace showerheads	\$4,531	900 gpd	\$1,200	3.2	City provides
4. Replace urinals with waterless	\$4,184	1,063 gpd	\$8,800	25.2	\$2,750
5. Repair leaking pressure assist toilets	\$503	100 gpd	\$500	11.9	\$50
6. Repair leaking showerheads and diverter valves	\$2,658	528 gpd	\$1,000	1.4	\$100
7. Install hose end shut-off nozzles on marina slips	\$3,833	1,496 gpd	\$1,500	0.4	City provides
Total	\$41,465	9,374 gpd	\$18,280	5.3	\$3,500

Note: Payback periods calculated WITHOUT including City incentive funds

HOW INCENTIVES WERE CALCULATED

1. Estimated water savings
2. \$1.40 per hcf per year of water saved. (\$600/acre foot avoided cost of water)
3. Estimated project life expectancy
4. Incentives will not exceed half the installed cost of an approved measure
5. Maximum total incentives per site is \$15,000

**City Incentive
\$3,500**



NEXT STEPS:

1. Complete Water Wise Incentive Program Application Form
2. City reviews Water Wise Incentive Program Application Form. City will review application form and notification of incentive authorization will be given within 2 weeks. Projects must be completed within 6 months of notification to receive incentive
3. Process for Incentive Payment. Notify City of work completion. City staff to complete final inspection to verify installation of equipment in conformance with approved Application Form within 2 weeks of notification of work completed. Once final inspection completed, City will process incentive payment
4. City staff will track water usage after site upgrades to determine results of program