Social Marketing Final Report: Improving the Disposal Practices oldstreet of Pool & HotrTub Ownerso

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Introduction & Background

This project was designed to meet the NPDES Phase II Western Washington Municipal Stormwater Permit (the Permit) Requirement S5.C.1.c which states that: "Each Permittee shall measure the understanding and adoption of the targeted behaviors for at least one target audience in at least one subject area. No later than February 2, 2016, Permittees shall use the resulting measurements to direct education and outreach resources most effectively, as well as to evaluate changes in adoption of the targeted behaviors."

Community Based Social Marketing Techniques were utilized to the maximum extent possible within the identified budget. Community Based Social Marketing, by definition is "to influence behavior for the greater social good." In this case, the greater good is water quality.

During the selection of an appropriate target audience for this stormwater behavior change project, City staff discussed their concern about the improper disposal practices of residential pools and hot tubs within City limits. According to the Permit, chlorinated pool and hot tub water is categorized as an illicit discharge when discharged into the City Stormwater System.

Compared to other similar-sized communities in Western Washington, Woodinville has a few unique qualities that were taken into consideration: Average household income and the number of large (1 acre+) City lots.

According to the <u>2015 U.S. Census ACS (American Community Survey</u>), the average household income for the Seattle-Bellevue-Tacoma area was \$75,331. The average household income of Woodinville, Washington is \$97,604.

The City reported that they also have a very large number of large City lots, an acre or more in size, compared to other cities in Western Washington.

Both of these qualities likely increase the number of pools and/or hot tubs located within the City limits compared to other Pacific Northwest communities.



Target Audience Research

The target audience was identified as: Pool and hot tub owners within the City of Woodinville who are currently disposing of their chlorinated pool and hot tub water into the stormwater system during cleaning.

To better understand the motivators, barriers and opportunities for reaching the target audience, a survey was conducted. The information from the survey was intended to inform an outreach program to educate residents about disposing of pool and hot tub water in a way that does not negatively impact local water quality.

Market Research Survey

The main purpose of this survey was to:

- Gauge residential awareness about the possible effects of chlorinated pool and hot tub water flowing into storm drains.
- Find out what factors play a role in the decisions while draining a pool or hot tub.

Survey Methodology

Timeframe: February 1 – March 9, 2017

Method:

Online survey using an open link. Notification of the survey was provided using the following methods (See Appendix A):

Method	Notes	Date	Clicks
Woodinville Weekly	Local Online Newspaper	2/7/17	0
Woodinville Wire	City Online Newsletter	2/1/17	18
City Website	Press Release	2/1/17	2
City Twitter Feed	Tweeted & Re-Tweeted	2/1 & 2/21	0
Postcard-Bulk*	Mailed to 6,948 Residents	2/6/17	129

*Woodinville does not have a utility billing department, so direct mail postcards were not an option. The postcard was mailed using zip codes, hence some of the mailed routes included both City and non-City residents. Approximately 75% were City residents and 25% were non-City residents.

Incentive: Entry into a prize drawing for a \$250 gift card to Molbak's Garden + Home Nursery was offered for participation.

Results: 62 complete surveys.

Margin of Error:

Due to a relatively small number of completed surveys, the sample sizes used in this analysis are very small, and the margins of error are very large. Therefore, these results should be interpreted as directional in nature rather than as a robust statistical analysis.



Survey Findings

Key Findings

- Most did not dechlorinate before draining
 - o 11% of respondents used a chemical dechlorinator before draining.
 - Most of these individuals also balanced the pH before draining.
 - All of these individuals also drained onto the lawn or landscaping.
- Disposal into the street or storm drain was relatively uncommon
 - Fewer than 10% of respondents had disposed of water in the street or storm drain.
 - But, none of those had chemically dechlorinated and only one had tested the chlorine before draining.
- Very few used a contractor to drain their pool or hot tub; but most of those who did had not asked about disposal practices.
- · Concern for the environment is high
 - All respondents indicated some concern about water pollution; 70% were very or extremely concerned.
 - 75% are very or extremely willing to change their lifestyle to reduce damage they cause to the environment (most of the remainder are moderately willing).
- But awareness of the issue is very low
 - Among all survey respondents, only 10% had ever seen or heard any information about the proper way to dispose of pool or hot tub water, and fewer had heard anything about the environmental impacts of disposing of pool or hot tub water.

- The target audience, or those whose current practice is to dispose of chlorinated, pool
 or hot tub water into the street or storm drain, was even less likely to have heard of
 the issue than owners in general, but were similarly concerned and willing to change
 - 93% had never seen or heard any information about the proper way to dispose of pool or hot tub water.
 - 100% had never seen or heard any information about the environmental impacts of disposing of pool or hot tub water.
 - 100% considered themselves at least moderately concerned about water pollution, and at least moderately willing to change their lifestyles to reduce environmental damage.

Residents Disposal Practices

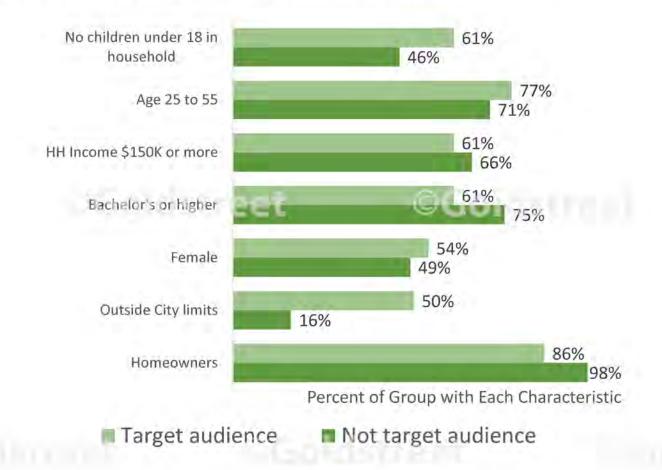
All Pool & Hot Tub Owners

- 95% of respondents have a hot tub and 11% have a pool (6% have both)
- Most did not dechlorinate before draining
 - o 11% of respondents used a chemical dechlorinator before draining.
 - Most of these individuals also balanced the pH before draining.
 - All of these individuals also drained onto the lawn or landscaping.
 - 20% of respondents tested the chlorine before draining, but did not use a chemical dechlorinator. One respondent noted in an open-end that they "wait until the chlorine is gone."
 - 10% tested or balanced the pH before draining, but did not test the chlorine or chemically dechlorinate.
 - o 35% did not test or balance either the chlorine or pH before draining.
 - Nearly 25% said they didn't know whether any of these were done the last time they drained.
- Disposal into the street or storm drain was relatively uncommon
 - Fewer than 10% of respondents had disposed of water in the street or storm drain.
 - But, none of those had chemically dechlorinated and only one had tested the chlorine before draining.
 - o Three-quarters of respondents disposed of water onto the lawn or landscaping.
 - o 14% didn't know where it was disposed.
- Very few used a contractor to drain their pool or hot tub; but most of those who did had not asked about disposal practices.
- Misperceptions are widespread
 - Only one-third correctly "completely disagreed" that it was ok to dispose of chlorinated water in the street/storm water system.
 - o 31% disagreed that it was ok to put chlorinated water on the lawn or landscaping.
 - o 40% disagreed that it was ok to put chlorinated water into a floor drain, sink or toilet.
 - o 31% falsely believe that salt water pools don't have chlorine.

The Torget Audience

Though knowledge of appropriate disposal practices was low, most owners were nevertheless using an appropriate practice. Those who were disposing of chlorinated water into the street or storm drain, or who believed this was acceptable, were segmented for further analysis, as this group is the "target audience" for interventions to change behavior or beliefs.

The target audience was more likely to live just outside the Woodinville City limits, and were somewhat less likely to have children in the household. Otherwise, they were largely similar demographically to other pool and hot tub owners in the area.



1. A small subset of owners demonstrated problem belief or behavior

- 23% of respondents were either draining pool or hot tub water into the street without first using a chemical dechlorinator, or agreed that it was an acceptable practice to do so. (n=14)
- o All of them have a hot tub; two also have a pool.

2. Specific practices vary

- Both with a pool had drained it in the past month; only one emptied into the street without dechlorinating; the other emptied onto the lawn after testing the chlorine; both agreed it was acceptable to empty into the street without dechlorinating.
- 43% of those with a hot tub emptied it into the street without dechlorinating (though one tested the chlorine before emptying it); 50% emptied it onto the lawn; 7% didn't know. 50% last drained it in the past 6 months; 86% in the past year.

3. The target audience was even less likely to have heard of the issue than owners in general, but were similarly concerned and willing to change

- 93% had never seen or heard any information about the proper way to dispose of pool or hot tub water.
- 100% had never seen or heard any information about the environmental impacts of disposing of pool or hot tub water.
- 100% considered themselves at least moderately concerned about water pollution, and at least moderately willing to change their lifestyles to reduce environmental damage.
 - Most are likely to dechlorinate in the future: 50% definitely, 36% probably

Motivators

Concern for the environment is high

- All respondents indicated some concern about water pollution; 70% were very or extremely concerned.
- 75% are very or extremely willing to change their lifestyle to reduce damage they cause to the environment (most of the remainder are moderately willing).
- Most will change behavior now that they know
 - Everyone who used a contractor to empty their pool/hot tub said they would definitely or probably ask their contractor about water disposal in the future.
 - 82% will definitely or probably dechlorinate water in the future; 13% might or might not.
 - Several wrote-in that they were new hot tub owners and hadn't drained it yet, but would do it properly now that they know.
 - A few requested additional information about disposing of water when other sanitizers had been used (e.g., bromine, cartridge-type).
- Knowledge is the key barrier but also a motivator. Final comments from respondents included:
 - "Thanks for doing this--I did not realize the impact this might have on water quality!"
 - "Thank you for this education. ... We will keep this advice in mind for the future."

Barriers

1. Barriers were similar to those for all owners

- Wet, hilly lawns with drainage issues make draining on the lawn or landscaping a challenge.
 - 11% of hot tub owners said they would have some difficulty disposing of hot tub water on the lawn or landscaping, citing too much water in the lawn from rain and uneven terrain leading to runoff or flooding.
- Several cited using a product other than chlorine for sanitization, or waiting for the chlorine to gas off before draining.
- 14% of hot tub owners said they would have some difficulty dechlorinating the hot tub before draining, citing not having the proper products or knowledge to accomplish dechlorinating.
- 14% of pool owners said they would have some difficulty dechlorinating the pool before draining, because they only partially drain the pool for cleaning and would not want to dechlorinate for a partial drain.

Communication and Messaging

Telephone interviews with local pool and hot tub supply and maintenance companies paired with the target audience research have identified several key communication points to follow while developing a behavior change campaign:

1. Raising awareness of environmental implications will be key to changing behavior

- 100% of the survey respondents considered themselves at least moderately concerned about water pollution, and at least moderately willing to change their lifestyles to reduce environmental damage.
- During the survey, after simply being told that disposing of chlorinated pool or hot tub water into the street or storm drain was harmful to the environment, 82% reported that they will definitely or probably dechlorinate water in the future.
- 2. Disposing into the street is the only option for some:
 - 11% of hot tub owners said they would have some difficulty disposing of hot tub
 water on the lawn or landscaping, citing too much water in the lawn from rain and
 uneven terrain leading to runoff or flooding.
- 3. There are various ways to de-chlorinate. (1) Dechlorinating chemicals can be purchased from any pool and hot tub supply store. (2) Exposing the pool or hot tub water to the open air will also allow the chlorine to dissipate, without the need for a dechlorinating chemical. Tips or steps for employing each technique should be included.
- 4. Consider the impact of partial drains.
 - 14% of pool owners said they would have some difficulty dechlorinating the pool before draining, because they only partially drain the pool for cleaning and would not want to dechlorinate for a partial drain.

Goals and Objectives

After reviewing the data and considering the ability to evaluate certain behaviors given the available budget and resources, the goals and objectives for this project are defined as follows:

Goals:

- 1) Reduce the amount of chlorinated water entering the stormwater system within the City of Woodinville.
- 2) Raise awareness of the potential environmental impacts to water quality from improper pool and hot tub draining practices, by Woodinville residents.

Objectives:

- Increase the number of pool and hot tub owners who dechlorinate before disposing.
- Increase the number of pool/hot tub owners who "completely disagree" that it is ok to dispose of pool or hot tub water into the street or storm drain.

Marketing Strategy

Target Audience: Woodinville pool and hot tub owners who are currently disposing of their pool and hot tub water into the street or storm drain.

Target Behavior: We want pool and hot tub owners to ensure their pool and/or hot tub water is free of chlorine before disposal.

Education and outreach campaigns, especially those that are bringing forth a new issue to an audience, such as pool and hot tub disposal in Woodinville, should be multi-faceted to best ensure success. A multi-faceted campaign reinforces the desired message to your target audience, delivering the message, in various ways.

Pool & Hot Tub Disposal Brochure

Created a Brochure to provide (1) awareness of the potential environmental impacts of pool and hot tub disposal practices and (2) clearly define the proper techniques for protecting water quality when disposing of pool or hot tub water.

Messaging

The brochures were created to draw attention of pool and hot tub owners in Woodinville. Demographically, the brochure targeted educated, homeowners with annual household incomes over \$150,000. The identified target audience is also very mindful and responsive to environmental messages. Messaging included:

- 1. Created a connection between pool and hot tub maintenance and water quality.
 - a. Simple tips for safe disposal of pool or hot tub water
 - b. How your pool or hot tub water might be harming local waters
 - c. Simple steps for ensuring your pool or hot tub water isn't polluting local waters

- 2. Increased basic awareness of the issue:
 - a. How polluted stormwater can impact the environment
 - b. How chlorine can impact the environment
- 3. Avoided highlighting the illegality of illicit discharges. The target audience research showed that raising awareness of the issue could very likely be enough to change behavior, since nearly all of them were simply unaware of the issue or the desired behavior. "It's illegal" is not only unnecessary to inspire the desired behavior, it could actually deter the target audience from listening to the message, since they have never been educated on the subject. The legal ramifications certainly exist, and may have a place for the future outreach, but not recommended for this first effort to change behavior.

Materials & Delivery

The brochure was made available where pool and hot tub owners can be found, through the local pool and hot tub supply companies. All of them expressed a willingness to make the brochure available to their customers, since the messages would in no way conflict with their current practices. The brochures were placed at **KrisCo Aquatech Pools and Spa, Aqua Rec's and Elite Spas Northwest.**

Pool & Hot Tub Disposal News Article

Messaging

A short, but clear article provided the City an opportunity to bring awareness to the issue of pool and hot tub water disposal, plus reinforce the other elements of the campaign.

Delivery

The Press Release and survey notifications were shared through all available news and media outlets available to the City, including:

- Woodinville Wire
- Woodinville Weekly
- Twitter Feed
- Press Release
- Local HOA Newsletters



Pool & Hot Tub Disposal Snackable Ads

Messaging



<u>Snackable ads</u> are a versatile, and cost effective way to deliver many short messages. They are intended to be delivered electronically, on websites, through social media and targeted social media advertisements. Thee snackable ads, designed for this project, include a series of quick, stand alone messages intended to get people to take the survey.



Materials & Delivery

The <u>snackable ads</u> were designed in an electronic image format, (i.e., .jpeg or .png). The following are locations where the snackable ads were placed:

- The City of Woodinville Twitter Feed
- The City of Woodinville Website
- The Woodinville Wire, as an image to accompany the news article referred to above.
- The Woodinville Weekly, as an image to accompany the news article referred to above.

Evaluation Plan

A very important part of any social marketing campaign is evaluation. The initial baseline data was collected during the target audience research phase of this project. The follow-up survey is described below.

Goals

- 1) Reduce the amount of chlorinated water entering the stormwater system within the City of Woodinville.
 - Raise awareness of the potential environmental impacts to water quality from improper pool and hot tub draining practices, by Woodinville residents.

Objectives

- Increase the number of pool and hot tub owners who dechlorinate before 0 disposing.
- Increase the number of pool/hot tub owners who "completely disagree" that it is ok to dispose of pool or hot tub water into the street or storm drain.

Follow-up Survey

The survey targeted all Woodinville residents who own a pool or hot tub. The survey was short in nature, limited to questions needed to measure any changes in behavior, as related to the goals and objectives of this project. Full survey questions provided in separate attachment along with all tabulations of the survey data.

Survey Methodology **Timeframe:** June 28, 2018 to July 25, 2018

Qualified respondents (e.g., had a pool or hot tub, were involved in decision making, etc.) Method: from the pre survey were re-contacted via email. 48 individuals were sent email invites and two rounds of reminder emails were also sent. The survey was also promoted via the City's social media sites, though only one survey was completed and the respondent did not qualify.

Incentive:

None

Results: 14 completed surveys.

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Margin of Error:

Due to a relatively small number of completed surveys, the sample sizes used in this analysis are very small, and the margins of error are very large. Therefore, these results should be interpreted as directional in nature rather than as a robust statistical analysis.

Survey Demographics:

Male	21%
Female	64%
No reply	14%
Age	-
25 to 34	29%
35 to 44	7%
45 to 54	36%
55 to 64	7%
65 +	14%
No reply	7%
Presence of Children	
No Children	57%
Children (under 18)	28%

No reply

	48 Invites Sent		
-	27 Started		
e	et 19		
	Completed		
	14		
	Qualified		
	Qualified Education		
21%		21%	
21% 64%	Education	21% 71%	
	Education Less than a Bachelor's		
64%	Education Less than a Bachelor's Bachelor's or higher	71%	
64%	Education Less than a Bachelor's Bachelor's or higher No reply	71%	
64% 14%	Education Less than a Bachelor's Bachelor's or higher No reply Household Income	71% 7%	
64% 14% 29%	Education Less than a Bachelor's Bachelor's or higher No reply Household Income Less than \$50K	71% 7% 21%	
64% 14% 29% 7%	Education Less than a Bachelor's Bachelor's or higher No reply Household Income Less than \$50K \$50K to \$149k \$150K or more	71% 7% 21% 21%	
64% 14% 29% 7% 36%	Education Less than a Bachelor's Bachelor's or higher No reply Household Income Less than \$50K \$50K to \$149k	71% 7% 21% 21% 50%	
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64% 14% 29% 7% 36% 7% 14%	Education Less than a Bachelor's Bachelor's or higher No reply Household Income Less than \$50K \$50K to \$149k \$150K or more No reply Residence	71% 7% 21% 21% 50%	
64% 14% 29% 7% 36% 7% 14%	Education Less than a Bachelor's Bachelor's or higher No reply Household Income Less than \$50K \$50K to \$149k \$150K or more No reply Residence In City limits	71% 7% 21% 21% 50% 7%	
64% 14% 29% 7% 36% 7% 14% 7%	Education Less than a Bachelor's Bachelor's or higher No reply Household Income Less than \$50K \$50K to \$149k \$150K or more No reply Residence In City limits Out of City limits	71% 7% 21% 21% 50% 7%	
64% 14% 29% 7% 36% 7% 14%	Education Less than a Bachelor's Bachelor's or higher No reply Household Income Less than \$50K \$50K to \$149k \$150K or more No reply Residence In City limits	71% 7% 21% 21% 50% 7% 50% 50%	

The Target Audience

The percentage of those meeting the target audience definition decreased from pre to post survey. The target audience for intervention was defined as those who were disposing of untreated water into the street or storm drain, or who believed this was acceptable. This target audience was actually more likely to complete the post survey than those who were not in the target audience at baseline. (23% of those who completed the pre survey met the target audience criteria, but of those completing the post survey, 36% met the target criteria on the pre survey).

This is consistent with the increase in those who reported seeing/hearing information about the proper way to dispose. Some of that information may have been obtained from the pre survey.

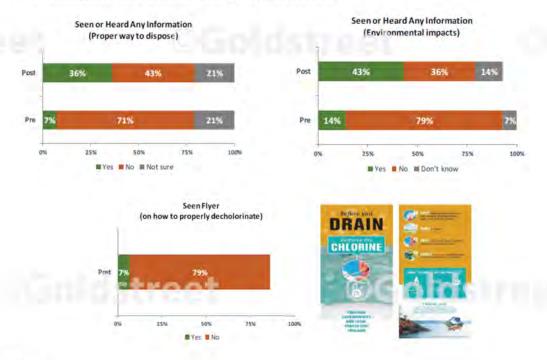
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Survey Findings

Awareness:

• Awareness was higher on the post survey.

 The proportion of respondents self-reporting having seen or heard anything (from any message source) regarding the proper way to dispose of pool or hot tub water, and the proportion reporting having seen or heard anything about the environmental impacts of doing so, increased.

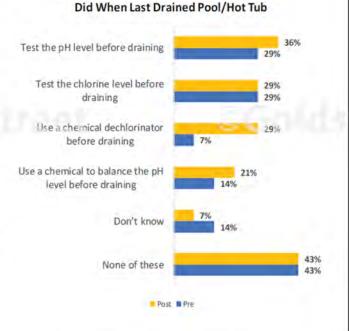


Survey Findings

Behavior:

Respondents indicated taking more actions before draining their pool or hot tub, on the post survey.

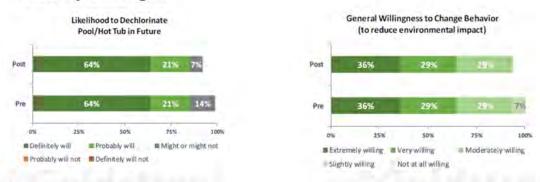
 Respondents were generally more likely on the post survey to indicate that they had tested the pH level before draining; used a chemical dechlorinator before draining; and/or used a chemical to balance the pH before draining. However, the proportion indicating "none of these" remained unchanged suggesting people who were already taking some action are taking additional actions, rather than that those who were doing nothing are now doing something.



Survey Findings

Future Behavior:

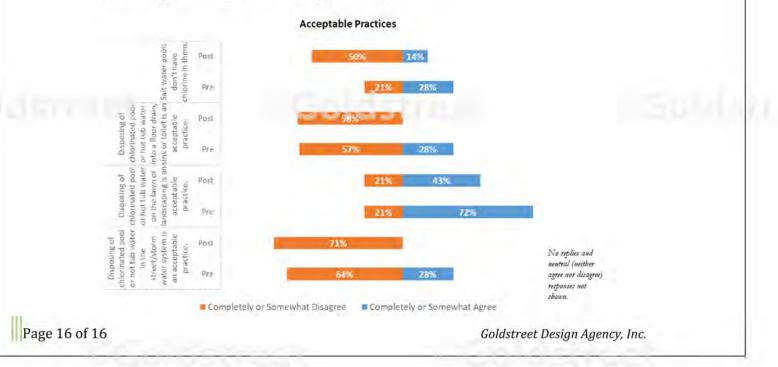
- At both time points, respondents indicated that they were generally likely to dechlorinate in the future as well as change their behavior for the benefit of the environment.
 - Nearly all respondents on both the pre and post survey indicated a likelihood to dechlorinate in the future.
 - Nearly all respondents on both the pre and post survey were generally willing to change their behavior to reduce the damage they cause to the environment.
 - The perceived difficulty of disposing water on lawn and dechlorinating their pool or hot tub, both of which were already seen as generally not difficult, was relatively unchanged.



Survey Findings

Opinions and Attitudes:

- Disagreement with each statement generally increased, and agreement decreased, on the post survey.
 - Concern about water pollution (not shown) was generally high, but also relatively unchanged since the pre survey.











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Postcard, bulk mailed to 6,948 residents, roughly 75% were City residents and another 25% were county residents. *Mailed the week of February 6, 2017:*



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