Citation	Filename	Targeted Behavior Focus	List of Multiple Behaviors Covered	Change Focus	Change Explanation	Any linkage to water quality monitoring?	Description/Abstract	Other Notes	Shows Clear Postive Trend in Awareness, Behaviors, or WQ	Explanation	Project Within Bay Watershed	Evidence of Statistical Analysis Provided	Type of Analysis (if provided)
Alachua County Environmental Protection Department. 2012. *Keeping Grass Off the Streets Campaign. Social Marketing Public Outreach Campaign Final Report* . Alachua County Environmental Protection Department, Alachua County, FL. Accessed February 2015. http://watersheded.com/sites/default/files/registered/docs/Final%20Report_Grass%20Clippings.pdf	Alachua County Environmental Protection Department 2012.pdf	Grass/leaf maintenance	N/A	Multiple, please list	Change in awareness, perception or attitude; Change in rate of actual target behavior	N/A	In both the pretest and the posttest, most respondents reported that they, "blow clippings back into the yard" most often over all other choices. The frequency in which they reported "always" engaging in this behavior increased substantially (79%) from the pretest to the posttest. Three out of four respondents (74%) reported that if they were training someone to maintain landscapes, they would tell them to blow the clippings back into the yard. Seven out of ten respondents (69%) who saw the campaign said they have been more careful to keep clippings out of the roadways since seeing the campaign. One in four (24%) of those that saw the campaign said they were already very careful to keep clippings out of the road. When given a list of statements about grass clippings and the environment, the greatest increase in agreement (where 5 = strongly agree and 1 = strongly disagree) occurred among three of the key "Keeping Grass Off the Streets" campaign statements: (1) "Clippings left in the road can harm local lakes, rivers, and creeks." 3.86 pretest, 4.49 posttest = 16% increase in agreement; (2) "Grass clippings left in the road will eventually end up in the closest water body." 3.71 pretest, 4.26 posttest = 15% increase in agreement; and (3) "Clippings can clog storm drains and cause flooding." 4 pretest, 4.47 posttest = 12% increase in agreement.		Y	Clear increases in good behaviors reported in final survey.	N		
Alachua County Public Works. 2009. *Alachua County Scoop the Poop Campaign, Final Report, September 2009* . Alachua County Environmental Protection Department. Alachua County, FL. Accessed February 2015. http://www.alachuacounty.us/depts/epd/documents/waterresources/final%20pet%20waste%20report.pdf.	Alachua County FL 2009.pdf	Pet waste pick up	N/A	Multiple, please list	Change in awareness, perception or attitude; Change in rate of actual target behavior	N/A	To measure the effectiveness of the Scoop the Poop campaign a telephone survey was conducted by the University of Florida Bureau of Business and Economic Research to determine the self reported behaviors and attitudes of participants before and after the campaign was launched. Prior to the release of any of the campaign materials, telephone surveys were completed by 185 dog owners with Gainesville mailing addresses between February 11, 2009 and March 12, 2009. After most of the major campaign elements were conducted, 112 of these same dog owners completed the follow up interview between June 29, 2009 and August 13, 2009. The "Stink Foot" commercial was still airing in the movie theaters during the post campaign survey, so the messages may have been fresher in the minds of movie goers that were included in the survey. • Of the respondents that get rid of their dog's waste, 48% of the pre-campaign and 57% of the post-campaign reported putting the waste in the trash. There was a 9% increase in participants reporting that they disposed of dog waste in the trash in the post-campaign survey compared to the pre-campaign. • 10% of the post-campaign respondents that recalled the campaign reported changing their behavior as a result of it.		Y	Positive behavior changes related to pet waste pickup.	N		
Banigan, L., and S. Whitford. 2013. *Sinclair Inlet Restoration Project Final Report* . Kitsap Public Health District, Bremerton, WA. Accessed February 2015. http://www.kitsapcountyhealth.com/environment/files/reports/Sinclair%20Inlet%20Final%20Report%20Dec%202013.pdf.	Banigan and Whitford 2013.pdf	Marina pumpout	N/A	Change in awareness, perception or attitude	N/A	N/A	The restoration plan originally sought to implement a marina pumpout outreach program by distributing 100 educational boat seat cushions and monitoring pumpout use before and after seat distribution; however, due to confounding impacts of the economic downturn on marina pump-out data, the before and after results monitoring program were revised to collect survey data rather than monitoring pumpout data. Written surveys were designed as assessment tools and conducted in two phases, combined with distribution of educational materials to boaters. The goal of the surveys was to assess boater's awareness and use of sewage pump-out facilities. The first phase involved meeting with boaters in local marinas, discussing the issues with them, and requesting that they complete a written survey. Clean Boating Kits were distributed along with the initial survey. These contained printed materials on clean boating, tips for preventing pollution and boat fires, small spill kits and Boater Guide Maps. In addition, bilge BioSoks (oil & fuel absorbents) were provided to each boater that completed the survey as a "thank you" gift. Educational materials were developed in partnership with the WSU Extension and Puget Soundkeeper Alliance. The second survey was mailed to boaters who completed the first survey in December 2011. This survey asked follow up questions about which educational materials the boaters found most helpful, and what changes in attitude or behavior (if any) had occurred since the first survey. To encourage boaters to complete the second survey, a No Spill Fuel Recovery container was offered as a gift. Even with this incentive, and multiple efforts to contact participants, only 55% of participants returned the second survey. A comparison was conducted between the responses to survey #1 (pre) and survey#2 (post) to determine what changes may have occurred with respect to boater's knowledge and/or behavior. The 95% confidence intervals were calculated to determine whether there was statistical significance between the pre and post surveys. -Recognition of pumpout symbol: There was an increase in symbol recognition from 32 to 43 respondents however this was not statistically different. -When asked whether it is illegal to dump untreated sewage within 3 miles of shore, there was essentially no difference between the pre and post survey. The majority of respondents (42 to 43 respondents, out of a total of 44) indicated that YES it was illegal to dump untreated sewage. -When asked whether untreated sewage from boats was biodegradable and generally harmless, the majority of respondents for both pre and post surveys indicated that they did not agree. -When asked whether untreated sewage from boats can harm the environment, there was a slight increase from 35 to 38 of respondents who agreed with this statement, however this was not statistically different. -The majority of respondents stated that they do not discharge their tank into the water when pumpout facilities are not convenient, but again this was not a statistically significant difference. -The post boater survey included several questions regarding motivating factors that influenced changes in boating habits. Marina rules and educational materials were the top two responses to this question as shown below. Among educational materials the BioSok oil and fuel was ranked as the most helpful.		N	No major change from pre-test to post-test.	N	Y	Mention of statistical analysis
Becot, F. 2013. *Awareness, Knowledge, Opinions, and Behaviors Related to Stormwater in Chittenden County, Vermont* . University of Vermont, Center for Rural Studies, Burlington, VT.	Becot 2013.pdf	Multiple, please list	Pet waste pick up; Fertilizer reduction; Car washing	Change in rate of actual target behavior	N/A	N/A	The RSEP is an outreach campaign that all the MS4s in Chittenden County pay into to meet their stormwater outreach requirements. The campaign was launched in 2003 with a pre-survey. A post-survey was done in 2007. This 2013 survey was presumably done to continue to track changes as a result of the outreach. In June 2013, the Chittenden County Regional Stormwater Education Program (RSEP) commissioned a study to access awareness, knowledge, opinions, and behaviors related to stormwater pollution among households in nine municipalities in Chittenden County. This document presents the methods and findings from the study. However, it does not present an analysis or conclusions. Statistically significant findings include: 42% reduction in reported home fertilizer use as compared to the 2008 survey; 88.6% reduction in number of people who report fertilizing their lawn in the winter; 69% increase in DIYers that report that their fertilizer does not contain phosphorus; 23% increase in number of people reporting that they put pet waste from their yards in the trash. Other findings: No statistically significant changes from 2008 to 2013 in terms of pet waste disposal practices when walking a dog. No significant changes in residential car washing behaviors.		Y	Some statisically significant changes replated to fertilizer use.	N	Y	SPSS (bivariate analysis, longitudinal analysis()
BH Consulting, LLC. 2014. *OSS Owner Education Project: Final Report* . Prepared for Thurston County, Washington, Environmental Health by BH Consulting, LLC.	BH Consulting 2014.pdf	Septic system maintenance	N/A	Change in rate of actual target behavior	N/A	N/A	The goal of this pilot project was to determine if an efficient and electronic training method could enable county-wide septic system owners to become knowledgeable and skilled at properly inspecting and maintaining their septic system. Three hundred invitations were sent via regular mail. Those owners who agreed to participate had to respond by email in order to obtain their email address as all subsequent correspondence was electronic. All participants were sent an electronic pre-test to determine current knowledge. After receiving the completed test, a link to the instructional video (from Clallam County) was sent. After the participants watched the video, they took a post-test. An online video is an electronic method and would be more equitable in that anyone with a home computer could view it. As a refresher for certified OSS owners, it would be a more efficient training model than a more labor intensive classroom setting and would be available to the OSS owner when needed to do an inspection. However, OSS owners who viewed the video and took the test online had difficulties inspecting their own systems and identifying problems. As an alternative to certifying OSS owners to inspect their own systems, this training method would be very labor intensive – both from the administration of the tests and videos to the time-consuming staff oversight and coaching of the initial inspections. Therefore, the final determination is that the video does not provide adequate training to certify an OSS owner to correctly do their own inspection and find deficiencies. The professionally produced video is a very good tool when used as a refresher for OSS owners who have previously attended the intensive classroom/demonstration park course offered by the county. The video is a good educational tool for informing OSS owners of the basics of septic system operation and maintenance. It can be made even better by editing to include information on 'How Septic Systems Fail'. Other outreach by the County included websites, brochures, booths at community events, signs on city buses, radio spots, and training/workshops (Septic 101 and 201) for homeowners who want to do their own system inspections. A questionnaire was developed and sent (in September 2013) to 150 class attendees. These certified homeowners were chosen at random from class participants of the first 3-year cycle (2007 – 2009). The certified homeowner had to be 'in good standing', i.e. their certification had not been revoked due to failure to renew their certificate. The overall response was very positive. The program content is providing homeowners with the skills to conduct their own septic system inspections. The inspections are being done and are being repeated at time of renewal. Information is recalled, or handouts and personal notes provide the needed refresher.	There are 9 counties in the Puget sound area that all using a similar approach and share outreach products/activities to some extent.	N	Project evaluated if a training video was a good way to certifiy homeonwer to a septic inspection. They found it was not sufficient and that classroom training is what is needed.	N		

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Brehm, J.M., and B.W. Eisenhauer. 2014. *Maintaining the Health of the Nippersink Creek Watershed: An Evaluation of Phase II Outreach Activities and Community Survey* . Illinois State University, Department of Sociology and Anthropology, Normal, IL. Accessed February 2015. http://nippersink.org/Report/NippersinkCkWatershed-PhaseIIExecutiveReport-5-30-14.pdf.	Brehm and Eisenhauer 2014.pdf	Multiple, please list	Pet waste pick up; Fertilizer reduction	Multiple, please list	Change in awareness, perception or attitude; Change in rate of actual target behavior	N/A	One of the primary goals of this project was to identify changes in adoption of NPS management practices by residents through the measurement of specific BMP adoption. To address this goal, Crosstab comparisons were run on BMP adoption by survey year. Table 9 presents the results, comparing changes over time from 2010 to 2013. "Keep Grass Clippings and Leaves Out of Roads, Ditches, Gutters" increased from 65.8% doing this (survey year 2010) to 84.1% (2013 survey year); "Use of Phosphorus Free Fertilizer" increased from 35.0% doing this, to 58.3% ; and "Properly Dispose of Pet Waste" increased from 60.4% to 80.3% . Overall, adoption of BMPs is improving over time. However it should be noted that because there are so many possible intervening variables that can influence change over time, it is difficult to connect this change to a SINGLE influence, such as our PFF campaign. However, the consistency in statistically significant changes in the use of BMPs that all indicate an increase in BMP use is the single best indicator of project effects. The increase in the use of all seven BMPs was statistically significant, with the use of phosphorus free fertilizer and properly disposing of pet waste showing the largest increases in adoption over time. Table 10 compares those who have/have not seen the logo with adoption of BMPs. The findings show that four BMPs showed a statistically significant increase in adoption correlated with recognition of the Nippersink logo. "Keeping grass clippings and leaves out of road, ditches and gutters" increased from 82.1% for those who had not seen the logo, to 93.2% among those who saw the logo. "Using phosphorus free fertilizer" also increased from 56.2% to 67.7% for those who saw the logo. Overall the findings indicate that the use of the logo in the overall campaign appeared to have had some positive impacts. It is especially promising to see that the use of phosphorus free fertilizer increased, given that this was the primary message of the logo and campaign. Considering that only 19% of respondents indicated that they saw the logo, these findings are even more promising for the implementation of future outreach efforts.		Y	Clear increases in several good behaviors, although difficult to isolate any other contributing variables.	N	Y	Descriptive statistics, t-tests, and multivariate procedures
Clallam County Health & Human Services. 2014. *Clallam County On-site Septic System Owner (OSS) Survey (July--August 2013)* . Clallam County Health & Human Services, Environmental Health Section, Clallam County, WA.	Clallam County 2014.pdf	Septic system maintenance	N/A	Change in rate of actual target behavior	N/A	N/A	Since 2009 Clallam County Environmental Health staff have focused on educating septic system (OSS) owners about OSS maintenance activities by providing Septics 101 and 201 workshops, a newsletter (Clean Water Herald), and incentive programs. The objective was to obtain at least 400 completed surveys from homeowners whose primary residence utilizes a septic system in order to access information regarding: their knowledge of their own septic system; their knowledge of their responsibilities under the law to maintain and inspect their system; views toward septic system ownership and required responsibilities; the motivations and barriers/impediments to complying with the inspection requirements and septic maintenance; the effectiveness of CCEH's education and outreach efforts, including workshops and the Clean Water Herald—Septics Edition newsletter; interest in CCEH's new Do-It-Yourself (DIY/Septics 201) OSS inspection program for homeowners; and support for creating a stable funding source to support an OSS management program. Approximately 49% of all the responses indicated that they have attended Septic 101 (44.0%) and Septic 201 (5.2%) while about 51% have not taken a septics class (38.9%) or did not know about the training (11.9%). The classes are having an impact on compliance rates for septic inspections. According to the survey results, 71% of those who attended a class whether it was Septic 101, Septic 201, or on-line versions of Septic 101 and 201 had indicated in Question 6 that their septic system had been inspected. Whereas of those who had not taken a class, the percentage of OSS owners that had an inspection was significantly less at 62%. Of the survey respondents who had attended classes or participated in on-line Septics 101 and 201, 20% wrote that they had received valuable information resulting in behavior changes. The main changes in home water use habits mentioned by those who attended a class had to do with being more careful about what goes into their septic system: watch water usage; spread out laundry and other water usages; use less detergent or a different detergent; use less chemicals, bleach, and softener. When asked "Has reading the newsletter changed any of your attitudes or behaviors toward septic system maintenance? (You scheduled an inspection, you're limiting water use, you visited a website for R22information, etc.)" of those who provided comments, 273 wrote that the newsletter did not cause a change or that they were already performing the operations and maintenance described in the newsletters. Of the responders that read the newsletter, approximately 28% (495 responses) wrote that newsletter was very informative and had changed their views or behaviors toward septic system maintenance. The major changes noted were: limit and or spread out water usage; scheduled an inspection; visited the OSS website; made them more aware of their septic system; watch what enters the system such as chemicals/bleach, type of soap, type of toilet tissue; check system regularly; took a class.		Y	Inspection compliance rates are higher after educational classes.	N		
Coffman, L.S. n.d. *Reducing Nonpoint Pollution with Public Outreach / Education Programs* . Prince George's County Department of Environmental Resources, Largo, MD.	Coffman 2001.pdf	Multiple, please list	Fertilizer reduction; Grass/leaf maintenance	Multiple, please list	Change in awareness, perception or attitude; Change in rate of actual target behavior; Change in concentration or loads in urban stormwater	Many of the post-program pollutants increased. However, the median NO3/NO2 level dropped by 42% and the median TP level dropped 31% (highlighted in Figure 2). This drop is most likely the result of the education program to reduce the use of fertilizer, but this is not confirmed by the survey results that indicate little change in the use of fertilizer or timing of fertilizer application.	It has long been assumed that outreach programs directed at changing the behavior of residential property owners can have an impact on reducing nonpoint pollution associated with such activities as: lawn and garden care, car care, and disposal of yard wastes and household chemicals. From 1992 through 1997, Prince George's County, Maryland's Department of Environmental Resources (PGDER) conducted a comprehensive public education program to test this assumption. PGDER 's program attempted to measure the effectiveness of outreach efforts in three ways: (1) through before and after program surveys, (2) by using a water quality modeling assessment tool and, (3) by monitoring the water quality of the receiving waters before and after the outreach program. The findings indicate that the effectiveness of an outreach program depends greatly on three things: (1) the level of funding available to sustain efforts on a long-term basis, (2) the types of outreach venues used, and (3) tailoring outreach programs to address unique issues and socioeconomic factors in the target community. It was found that even with the intensive educational effort of this program, lasting over one year, the degree of change was marginal. The cost of a multifaceted targeted education program was far greater than anticipated, and cost prohibited implementation of the program on a countywide basis. Quantifying and understanding the fate and transport of urban pollutants and the effectiveness of the outreach efforts proved to be both complex and difficult. The survey indicated that 94% of the respondents would adopt the pollution reduction programs proposed by the county. However, this overwhelming support or willingness to adopt the environmentally friendly programs was not supported by the comparison of the two survey results. For example, the educational lawn care program recommended that lawns only be fertilized in the fall using 1/3 the recommended rate. Responses in the two surveys show no change in the seasonal application of fertilizer, with equal applications in spring and fall. There were some changes in the survey responses that were positive, such as an increase in the # of people that believe urban storm water causes problems. Although the survey results indicate an overwhelming willingness by the property owners to adopt more environmentally sensitive activities, the survey results did not demonstrate a significant change in targeted activities as a result of this program's outreach efforts. However, the water quality monitoring data did indicate that the median EMC of nitrogen and phosphorus was reduced following the completion of the outreach program. However, it is not entirely clear that this reduction was directly related to the outreach efforts; the reduction could have been associated with variations in rainfall or runoff patterns and intensities.	See report for additional detail	N	No clear link between the outreach conducted and behaviors reported. WQ did improve somewhat but cannot be clearly linked to outreach.	Y		
Cunningham Environmental Consulting. 2011. *Residential Stormwater Survey Public Attitudes, Awareness and Behavior* . Prepared for Kitsap Peninsula Clean Runoff Collaborative by Cunningham Environmental Consulting, Bainbridge Island, WA.	Cunningham Environmental Consulting 2011.pdf	Multiple, please list	Pet waste pickup; Fertilizer reduction; Car Washing; Grass/leaf maintenance	Change in awareness, perception or attitude	N/A	N/A	A phone survey was conducted in October 2011 of the attitudes and behaviors of 802 Kitsap Peninsula residents. The purpose of the survey was to track changes made since the 2008 benchmark survey and gain a better understanding of how local and regional stormwater outreach programs influence residential awareness, activities and behaviors. The report was composed of a paired survey (2008 and 2011) of before and after behaviors. In order to have a likewise (apples to apples) comparison, the 2011 un-weighted data were compared to the 2008 un-weighted data. -Dog owners living on small lots of 0.5 acres or less, which were targeted in the Kitsap regional pet waste campaign, were more likely to pick up pet waste in their yard more frequently and pick up the waste every time while dog walking than were residents living on larger lots. Those who lived on small lots and picked up waste either daily or weekly were also more likely to dispose of pet waste properly, placing it in the trash. -The percentage of respondents washing their cars where wash water goes onto grass, dirt, or other permeable surfaces increased from 40% in 2008 to 69% in 2011. Wash water going into storm drains, down the street and into ditches decreased significantly from 2008 to 2011. -Chemical fertilizer: Use in 2008 was 52% for entire lawn coverage and 57% for spot coverage. In 2011, chemical fertilizer was used by 21% of the respondents. -Weed and Feed: Use in 2008 was 54% - 56%, depending on coverage. Use in 2011 was reported by 40%. -Organic or slow-release fertilizer: Use in 2008 was reported by about 52% of the respondents. In 2011 40% reported using organic fertilizer. -The percentage of respondents who left dog waste on the ground most of the time when walking their dog decreased between 2008 and 2011. In 2008, 11% said they left dog waste on the ground most of the time, and in 2011, this behavior was reported by 5% of the respondents. -Respondents in the 2011 survey were more likely than the 2008 respondents to think pesticides and fertilizers from yards make a significant contribution to pollution. -Respondents in the 2011 survey were less likely to think that leaking septic systems are a significant contribution to pollution; pet waste left on the ground does not contribute to pollution; and washing cars on pavement does not contribute to pollution.		Y	Increases in good behaviors in terms of fertilizer use and pet waste pickup. Also increases in awareness on several issues after outreach program.	N	Y	SPSS (t-test, z-test)
DHM Research. 2013. *Felida Neighborhood Lawn Care Knowledge and Behavior Post-Test Research* . Prepared for Clark County Environmental Services by DHM Research, Portland, OR.	DHM Research 2013.pdf	Fertilizer reduction	N/A	Multiple, please list	Change in awareness, perception or attitude; Change in rate of actual target behavior	N/A	Half of Felida residents recalled receiving mailings from Clark County; almost 20% said they changed their gardening and lawn care due to the mailers. Almost two-thirds (63%) of Felida residents used fertilizer over their entire lawn. Similar to pre-test results, they tend to do this almost equally over Spring (March-April) and Summer and Early Fall (May-September) More than one half of Felida residents (56%) did not spot fertilize their lawn or garden, an increase of 6% from pre-test numbers. Residents spot fertilized fairly equally over Spring (March-April) and Summer and Early Fall (May-September) Six in ten (61%) Felida residents watered their lawn after fertilizing (compared to 41% in the control group), with half (49%) who did so for 10 minutes or more, and 12% who watered for less than 10 minutes. Three in ten residents (28%) didn't water after fertilizing. Findings were fairly consistent with figures seen in the pre-test. Belief was split as to the best time to fertilize. Thirty-seven percent (37%) said the best time to apply fertilizer was when it is forecasted to rain in the next few days, while 34% said its best when no rain is in the forecast.	See report for additional result details. Refer to the pre-test report to read more about what people knew before the outreach (DHM Research 2012). For more information about the outreach, refer to *Clark County's NPDES Phase I Stormwater Management Effectiveness Monitoring: Targeted Outreach Action* (Hutton 2014)	N	Not much of a difference between pre-test and post-test results.	N		

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Dietz, M.E., J.C. Clausen, and K.K. Filchak. 2004. Education and changes in residential nonpoint source pollution. *Environmental Management* 34(5):684–690.	Dietz et al 2004.pdf	Multiple, please list	Pet waste pickup; Fertilizer reduction; Grass/leaf maintenance	Multiple, please list	Change in awareness, perception or attitude; Change in rate of actual target behavior; Change in concentration or loads in urban stormwater	The objective of the project reported here was to determine if the quality of runoff from a suburban neighborhood would improve as a result of educating homeowners about residential BMPs. NO3-N and bacteria concentrations in stormwater runoff decreased significantly due to education, but, surprisingly, TN concentrations did not change. NH3-N and TP concentrations also did not change from the calibration to the treatment period.	This project involved a collaboration of Extension educators and university researchers. Pollutants considered for this study were nitrate+nitrite-N (NO3-N), ammonia-N (NH3-N), total Kjeldahl-N (TKN), total nitrogen (TN), total phosphorus (TP), and fecal coliform bacteria. According to the treatment period survey, 11% of respondents in the treatment watershed began fertilizing their lawn based on the results of a soil test, whereas none had done so previously. In addition, 82% of respondents in the treatment watershed stated that they left clippings on the lawn compared to 62% from the initial survey. Twelve of 34 lots (35%) adopted some BMPs following education efforts, indicating a significant (P = 0.001) increase in BMP use overall. However, a v2 analysis of survey data indicated no significant changes in measured behavior with regard to specific questions. Analysis of covariance (ANCOVA) results indicated that a 75% reduction in nitrite + nitrate - N (change in intercept, P = 0.001) and a 127% reduction in fecal coliform bacteria (change in slope, P = 0.05) concentrations occurred. However, the treatment period regression was nonsignificant for bacteria. Total nitrogen, total phosphorus, and ammonia-N concentrations did not change significantly. Intensive education efforts produced BMP implementation and measurable water quality improvements. Intensive education efforts, in the form of workshops and one-on-one consulting, resulted in a significant adoption of BMPs; the quality of stormwater runoff also improved. However, our measured behaviors did not change significantly. It is possible that our survey of behaviors did not accurately assess homeowner actions that impact nonpoint pollution.	Also see Dietz et al 2002	Y	Found improvments in stormwater water quality after education efforts. Data showed that good behaviors also increased after the education effort, although changes were not shown to be statistically significant.	N	Y	chi-square
Diorka, S. 2008. Public Awareness of Delhi Charter Township Storm Water Public Education Activities. Master's thesis, Western Michigan University, Kalamazoo. Accessed February 2015. http://www.mywatersheds.org/publications/Other%20PEP_Habitat/Delhi%20PEP%20Evaluation.pdf.	Diorka 2008.pdf	Multiple, please list	Pet waste pick up; Fertilizer reduction; Car washing	Change in awareness, perception or attitude	N/A	N/A	The study showed the expected short-term awareness outcomes of Delhi's Stormwater Public Education Program were being met; the top four activities in terms of successfully reaching and educating citizens were educational pamphlets, newsletter, web site, and the open house respectively; and the impact of the PEP so far was a consistent and high 82 ± 3.6% (at 95% confidence) correct awareness score (knowledge of the best choice) and a room-for-improvement 64 ± 4.8% (at 95% confidence) correct learning (actual behavior) score. The first hypothesis that Delhi citizens were more knowledgeable of water quality issues than the greater Lansing area was supported by the survey results (á = 0.05, excel generated df = 88, tcrit =.1.667, t =4.62). As for the second hypothesis that knowledge would increase with increasing number of exposures to educational information, survey results did not show sufficient evidence to conclude there was a positive linear correlation between the paired results of awareness scores and number of exposures to educational materials at the á level of 0.05 but it did at á 0.1 (manual calculation method df = 69, tcrit =.1.667, t =1.71). Study results and awareness scores for water quality indicated a need to establish an educational effort focused on local water quality, sources of stormwater pollution, and the fate of stormwater in Delhi. Recommendation is to establish a water quality testing program for the Sycamore Creek and the Grand River. These results, along with historical publically available water quality data should be communicated to the public through the Delhi newsletter and the web site. In addition, a map should be published showing all drainage districts in the township and made available to the public so they can see where their stormwater goes on its journey to the Grand River. Lawn care practices were the single personal behavior in need of change. Recommendation is to repeat the lawn care seminar and add an additional seminar on weed and pest control. Educational pamphlets should be continued regarding this topic and information should be published in the newsletter and web site. The 18 – 30 and 61 – 70 age groups should be targeted for additional education. The older age category can be covered by offering a lawn care seminar during a week day, and 18 – 30 year olds during a weekend or week day evening. Further study is needed to determine the reason for depressed learning scores of these two age groups and what can be done to increase awareness of and participation in the open house, seminars, and other educational opportunities. Delhi will repeat the survey every five years to obtain time-series data in order to identity trends or changes over time.	See pages 38 through 44 for detailed results	N	No link between exposure to outreach information and knowledge level.	N	Y	t-test
Eisenhauer, B. W., N. Stevenson, B. Weber, and J. Peterson. 2010. *Changing Homeowner's Lawn Care Behavior to Reduce Nutrient Losses in New England's Urbanizing Watersheds* . Plymouth State University, Center for the Environment, Plymouth, NH. Accessed February 2015. http://www.usawaterquality.org/nesci/focus_areas/Landscaping/pubs/final_social_sci_report_lawn_care_behav.pdf.	Eisenhauer et al 2010 - Changing homeowner.pdf	Fertilizer reduction	N/A	Multiple, please list	Change in awareness, perception or attitude; Change in rate of actual target behavior	N/A	The first evaluation goal was to determine if behavior change occurred among members of targeted audiences by conducting post-project surveys in four of the study communities surveyed in the original social science research in the project. Data from all communities (n= 103) indicated that some DIYers' turf care behaviors had changed in the ways that the project had intended: using less chemicals for turf care. As with many education efforts a major challenge is reaching audiences. Fifty-five percent of respondents experiencing Extension programs stated they used less lawn chemicals as a result, but only 25% of respondents had encountered turf care information from Extension in the last 3 years. Overall results indicate the project achieved desired goals, but perhaps not at the magnitude desired. Continued efforts to apply the information generated by the turf science and social science research in this project are warranted to protect water quality impacted by turf care practices. Additional data shows that residents used less fertilizer between surveys: those applying fertilizer once a year (decreased from 29% to 27%), twice a year (decreased from 27% to 8%), 3 times a year (decreased from 14% to 2%), and 4 or more times a year (decreased from 21% to 3%) Results show that the majority of respondents (55.6%) exposed to these programs were encouraged to use less chemicals on their lawn, and indicated doing so. One third of respondents indicated that exposure to these programs did not change their lawn care behavior. To supplement these findings bivariate statistical data analysis was conducted using chi-square tests to determine the relationship between questions asking about program exposure and reduction in fertilizer use, but the small sample size precluded meaningful statistical conclusions. Overall the data collected indicates that Extension programs informed by the project were successful in meeting their goals to reduce the use of lawn chemicals to protect water quality.		Y	Positive trends in behavior changes, although not statistically significant.	N	Y	SPSS (chi-square)
Eisenhauer, B.W. et al. 2010. *Changing Bangor Area Lawn Care Behavior: Results from the Evaluation Survey* . Plymouth State University, Plymouth, NH. Accessed February 2015. http://cfpub.epa.gov/npstbx/files/Maine_EvalStudyBASWG.pdf.	Eisenhauer et al 2010 - Changing Bangor.pdf	Fertilizer reduction	N/A	Change in awareness, perception or attitude	N/A	N/A	A behavior change outreach and education campaign was developed and implemented throughout the communities of Bangor, Brewer, Veazie, Hampden, Milford, Old Town, and Orono. A self-administered questionnaire was administered door-to-door in six neighborhoods throughout the Bangor Area. Each of the six neighborhoods was randomly assigned one of three treatments; control, standard messaging, and normative messaging. The normative messaging group and the standard group received all of the campaign material (doorhanger, stencils, and reference to the website) while the control group received no material. The normative message group, however, received a variation of the doorhanger where the content was altered to elicit lawn care norms and encourage participation in this norm. The norm used here was that most neighbors choose not to use fertilizers and pesticides on their lawns (a finding elucidated from the initial research conducted as part of the Changing Homeowner's Lawn Care Behavior to Reduce Nutrient Runoff in New England's Urbanizing Watersheds Project).Intention to reduce the use of lawn chemicals was assessed across the three treatment groups to compare for differences. A one-way analysis of variance (ANOVA) test with performed to statistically analyze the responses. ANOVA tests how much the mean values of a numerical variable differ among the categories of a categorical variable. In this instance, the numerical variable is the intention to reduce either fertilizer or pesticide use and the categorical variable is treatment type (standard, norm, and control). In addition a tukey LSD post hoc test was performed so that comparisons across groups could be determined, included mean differences and statistical significance (see figure 4). The tukey LSD shows the relationship of each group and indicates what groups means differ from one another, where as ANOVA simple shows the significance between treatment groups and intention. This post hoc test is essential to this analysis since comparing the differences between each treatment group is essential to the evaluation study. This analysis indicates that according to the differences in mean scores, the standard group is more likely to intend to reduce or eliminate both fertilizer and pesticide use than the control group. Furthermore, the norm group is more likely to intend to reduce or eliminate both fertilizer and pesticide than the standard. The relationship was the desired outcome for this project and indicates that our efforts are having effects in these neighborhoods. Also, the differences between the norm groups and the control groups revealed statistical significance, at a level of .023 for intention to reduce fertilizer use and .01 for intention to reduce pesticide use, revealing a clear difference between these groups (remember that statistical significance is a value of .05 or less). The evidence is clear that the neighborhoods receiving normatively framed messages were the most likely to express intention to reduce lawn chemical use, and future messaging should be developed with this finding in mind.	Also see: Eisenhauer, B.W. et al. 2010. Changing Bangor Area Lawn Care Behavior: Evaluation Survey: Appendix. Plymouth State University, Plymouth, NH. http://cfpub.epa.gov/npstbx/files/Maine_EvalStudyBASWG.pdf. Accessed November 2014.	Y	Statistically significant changes in behavior intention after outreach efforts.	N	Y	ANOVA
Elway Research, Inc. 2009. *Water Pollution in Puget Sound: The View from the Back Yard. A Compilation of Public Opinion Research 2004–2009* . Elway Research, Inc., Seattle, WA Accessed February 2015. http://www.wastormwatercenter.org/files/library/water-pollution-in-puget-sound-view.pdf.	Elway Research 2009.pdf	Multiple, please list	Pet waste pick up; Fertilizer reduction; Septic system maintenance; Car washing	Multiple, please list	Change in awareness, perception or attitude; Change in rate of actual target behavior	N/A	The first section of this report looks at available data about area resident's perception of the problem of Puget Sound pollution. The second section looks at current behavior. All of the jurisdictions represented in this summary are focusing on some combination of four categories of behavior: yard maintenance, vehicle maintenance, pet waste disposal, and septic systems. The behavior measurements therefore focus in those same categories. The final section looks at the connections people make (or not) between their personal practices and behaviors and the health of Puget Sound. It looks at the willingness to change behavior as well as motivations and barriers to take a desired action. Refer to page 3 of 17 to review a quick description of the 11 studies. Kitsap residents who recalled water pollution messages reported lower usage of yard chemicals and better care with vehicle fluids than those with no such recall. However, those who heard a message in Kitsap did not show improved behaviors with pet waste. 24% reported "high levels" of the use of undesirable yard chemicals, compared to 38% who did not remember such a message. Tacoma's messages on car-care correlated with fewer respondents washing their cars on pavement, and with increased use of absorbent materials to soak up fluid spills. In the Tacoma test of car-care environmental messages, respondents who were exposed to education materials reported the following: (1) 17% washing cars on pavement, down from 23% and (2) 42% washing cars on grass or dirt, up from 34% . Snohomish pet owners who were exposed to information on proper pet waste reported better behaviors than random respondents elsewhere. In the Snohomish County test market: 8 in 10 residents with dogs who received education materials always picked up dog waste and put it in the trash. This compares to half of Kitsap dog owners and 40% in Pierce, in randomly-timed surveys.	Follow up with Elway Research to obtain reports, if possible.	Y	Increase in good behaviors seen for yard chemicals and car care.	N		

Citation	Filename	Targeted Behavior Focus	List of Multiple Behaviors Covered	Change Focus	Change Explanation	Any linkage to water quality monitoring?	Description/Abstract	Other Notes	Shows Clear Postive Trend in Awareness, Behaviors, or WQ	Explanation	Project Within Bay Watershed	Evidence of Statistical Analysis Provided	Type of Analysis (if provided)
Fauntleroy Watershed Council. 2008. *2008 Pet-Waste Study* . Fauntleroy Watershed Council, West Seattle, WA.	Fauntleroy Watershed Council 2008.pdf	Pet waste pick up	N/A	Change in rate of actual target behavior	N/A	N/A	In 2004, students at KapKa Cooperative Primary School completed a baseline study of pet waste in Fauntleroy Park, headwaters of Fauntleroy Creek in central Puget Sound. In that study, students counted fecal deposits along a popular dog-walking trail over a 12-month period and installed "put-and-take" bag dispensers at major park entrances. For the 2007-08 term, KapKa again partnered with the Fauntleroy Watershed Council to do a follow-up, surveying the same trail segment over the course of the school year. The kindergarten, first-, and second grade students found an average of 11 deposits per survey in two areas of concentration: near the S.W. Barton Street entrance at the north end of the trail segment and in a large clearing several yards down the trail. A scattering of deposits were found near the southern end of the trail segment. Compares high, low, and average dog-pile counts between 2004 and 2008. Found decreases in high and average counts from 2004 vs. 2008 after the installation of bag dispensers at park entrances.		Y	Positive behavior changes found, although data was collected by school-age children.	N		
Florida Stormwater Association. 2011. *TAPP Think About Personal Pollution* . City of Tallahassee Stormwater Management Group, Tallahassee, FL.	FL Stormwater Association 2011.pdf	Multiple, please list	Pet waste pick up; Fertilizer reduction	Multiple, please list	Change in awareness, perception or attitude; Change in rate of actual target behavior; Change in concentration or loads in urban stormwater	Calculated a 6% water quality benefit. Pre vs. post-project load summaries were measured by FDEP, reduction instream water quality parameters were 10% TN & 12% TP.	TAPP was a multi-media public education campaign aimed at reducing pollutants entering lakes and water courses in Tallahassee/Leon County. As a result of the program, nearly 40 Percent of Tallahassee Households (HHs) Reported Changes Due to TAPP [39.7% or 31,281 (HHs)]. Specifically, TAPP achieved a 10.8% decrease in households that apply fertilizer (37.3 % in 2007 vs 26.5% in 2009). That is a 29% decrease in the number that applied from 2007 to 2009. 45% of those that applied, used 0% P. ** note that this statement conflicts with information presented earlier in the PPT that stated "As a result of the education campaign, 18.4% of respondents switched to a non-P fertilizer" 30% of respondent dog owners indicated that they began picking up this spring. Pre vs. post-project nutrient load summaries were measured by FDEP, reduction instream water quality parameters were 10% TN & 12% TP.		Y	Clear decrease in fertilizer application and decreased use of non-P fertilizer. Pet waste pickup also increased. (30% reduction in non-pickups--translated to an estaimated 6% improvement in WQ)	N		
Foushee, S. 2010. *Pre- and Post-TV Campaign Surveys of Stormwater Awareness & Behavior in the Clean Water Education Partnership Service Area: Comparison and Findings* . North Carolina Clean Water Education Partnership, Durham, NC. Accessed February 2015. http://www.nccwep.org/pdf/cwep-final-survey-comparison-report.pdf.	Foushee 2010.pdf	Multiple, please list	Pet waste pick up; Fertilizer reduction; Car washing; Grass/Leaf maintenance	Multiple, please list	Change in awareness, perception or attitude; Change in rate of actual target behavior	N/A	Grass clippings: Pre-campaign respondents were more likely to leave them in the yard or put them in the garbage, while post-campaign respondents more often left them in the yard or used them for compost/mulch. However, differences in the post-campaign survey population between those who recalled seeing a television spot and those who did not were not substantial. Fertilizer: There were no substantial differences in the amount of people using fertilizer on their lawns between the first survey and the second. Differences in the post-campaign survey population between those who recalled seeing a television spot and those who did not were similarly negligible. There were no statistically significant differences with regard to the frequency with which people apply fertilizer to their lawns between the first survey and the second. Post-campaign respondents who did recall seeing a television spot were somewhat less likely to give the desired response "once a year or less." It is not likely that the CWEP media campaigns were a factor in this difference. There was a slightly significant difference between those who reported having their soil tested and those who did not, in that fewer participants in the post campaign survey reported having their soil tested (an undesirable change). It is unlikely that the CWEP media campaigns are an explanatory variable, since television ad recall was slightly positively associated with soil testing behavior. Car washing: Post-campaign respondents take their car to a car wash more frequently than those in the pre-campaign survey do. Additionally, pre-campaign respondents were more likely to choose some other car washing option than those in the post-campaign survey. The differences here may be partly due to the wording and response options they were given in the two campaigns. The first campaign included "someone else washes it" with the other option. This may be a reason more pre-campaign participants responded "other" to the question than did post-campaign respondents. There was a significant difference between surveys regarding where respondents reported letting the car wash water flow. Post-campaign participants were less likely to let the soapy water flow into the driveway than those in the pre-campaign survey, a positive (desirable) change. Respondents who reported having seen a television spot were more likely to give the desired response and less likely to give the undesired response than those who did not recall seeing a television ad. Pet waste: There was no statistically significant differences between the pre-campaign and post campaign survey with regard to whether respondents picked up their dog's waste. The largest portion of respondents in both the pre- and post-campaign surveys that walk their pets or have dogs, always (or almost always) pick up the waste. Oddly, the percentage of respondents reporting that they always pick up their pet waste was higher for those who reported recalling a television ad, and the percentage reporting that they do so only "sometimes" was slightly higher for those who did recall a television ad. It is unlikely that the media campaigns are a causal variable; more likely this reflects natural variation in the response set.	See report for additional result details	N	No really significant changes.	N	Y	chi-square
Franz, J.D., and D.T. Bailey. 2003. *City of San Diego Storm Water Pollution Program: 2003 Follow-Up Survey of City Residents* . Final Report. JD Franz Research, Inc., Sacramento, CA.	Franz and Bailey 2003.pdf	Multiple, please list	Pet waste pick up; Car washing; Grass/leaf maintenance	Change in rate of actual target behavior	N/A	N/A	The three main objectives of the program were as follows: Increase awareness that storm water flows to water bodies untreated; Change some behaviors from those that pollute water bodies to those that do not; Increase awareness of the "Think Blue" slogan. The primary purpose of the survey was to serve as a follow-up measure of awareness, attitudes, and behaviors relative to storm water pollution. The baseline survey was conducted in June and July of 2001; the first follow-up survey was conducted in July 30 and August, 2002. The public information campaign was conducted in 2001-2002 and 2002-2003. Of those who own a car, more than three-quarters (78 percent) in 2001 said they let the water run onto pavement such as a driveway or street. Comparable figures are three-fifths (60 percent) in 2002 and nearly three-quarters (72 percent) in 2003. Of those with gardens (38 percent in 2001, 32 percent in 2002, and 31 percent in 2003) said they throw their grass clippings and other green waste into the trash or garbage. Other somewhat common practices were recycling them (24, and 30 percent) and composting them or using them as mulch (13, 20, and 15 percent). The largest groups of respondents (68 percent in 2001, 55 percent in 2002, and 46 percent in 2003) said they sweep up lawn clippings that are on walkways, patios, and driveways and put them into the trash. The only other noticeable response was recycling them (13 percent in 2002 and 11 percent in 2003). Only one percent in 2001, three percent in 2002, and four percent in 2003 said they sweep or hose them into the street or gutter. The far the majority of dog owners (83 percent in 2001, 88 percent in 2002, and 86 percent in 2003) said they always pick up the droppings when they walk their dogs. In contrast, eleven percent in 2001, six percent in 2002, and 3 percent in 2003 said they never do. Five percent in both 2001 and 2002 and 10 percent in 2003 said they only usually or sometimes do. Overall a number of indicators moved in a positive direction, although the changes were not great enough to achieve statistical significance.		N	Percentage of people who sweep up lawn clippings and put them in the trash went down. The percentage of people who said they hose clippings into the street/gutter actually increased.	N	Y	No description of method provided
Frenzl, S., and B. Ball. 2011. *Final Report: Snohomish County Septic System Program* . Snohomish County Surface Water Management, Snohomish County, WA. Accessed February 2015. http://snohomishcountywa.gov/ArchiveCenter/ViewFile/Item/2171.	Snohomish County 2011.pdf	Septic system maintenance	N/A	Change in rate of actual target behavior	N/A	N/A	As a central part of this project, SWM developed and tested a multi-modal public involvement and education strategy with the goal of assessing the effectiveness of each outreach approach to better inform the development of a county-wide outreach program. The various approaches SWM developed, delivered and tested included 1) a direct mail campaign, 2) landowner workshops, 3) OSS care web pages, and 4) "house calls" from Snohomish Health District (SHD) sanitarians to inspect properties and talk one-on-one with landowners about their septic systems. SWM also took initial steps to develop an approach working in collaboration with OSS professionals (pumpers, installers and designers) to conduct outreach to their clients, and assessed the viability of this approach. The program promoted the following actions: Attend a septic care workshop; Visit the "Puget Sound Starts Here" website; Sign up for a Septic House Call; Keep solids, toxic, oil and grease out of the drain; Reduce/control water usage; Perform tank pumping and maintenance; Protect and inspect your drain field regularly. Post-project survey results showed mailers and sanitary surveys are good for educating people, but were not effective at encouraging people to adopt BMPs. Workshops are most effective for long-term behavior change (several hour commitment and trust between instructor and homeowner is key to long-term behavior change). According to our post-outreach telephone survey results, direct mail from our pilot program did not result in behavior change. However, our program did not include incentives that are meaningful or highly enticing from the landowners perspective. Other counties have provided meaningful incentives, such as a $100 rebate for people who have an inspection completed or install septic tank risers. A strategy that uses mailers with effective messaging and enticing incentives to promote specific BMPs (such as a $100 rebate) has a high potential to be effective in achieving behavior change; however, we recommend that a thoughtful evaluation program be integrated into this strategy to further test this hypothesis. Following the workshop, the vast majority of participants (90%+) either pledged to adopt actions or stated that they already performed them. Results from the survey indicate that workshop participants are significantly more likely to adopt the following behaviors compared to the control group (results indicate a statistically significant difference): • Prevent hazardous chemicals from going down the drain (55.3% compared to 33.3% by the control group) • Use less water over the course of the day (45% compared to 25.5% by the control group) • Spread out your water use throughout the week (62.5% compared to 21.3% by the control group) • Walk over your drainfield searching for odors (63.2% compared to 11.8% by the control group) • Have a pumper inspect your system on a regular schedule (37.8% compared to 10.8% by the control group) • Prevent kitchen scraps from going down the drain (53.8% compared to 23.4% by the control group)		Y	Postive trend in behavior intentions after workshops.	N	Y	No description of method provided

Citation	Filename	Targeted Behavior Focus	List of Multiple Behaviors Covered	Change Focus	Change Explanation	Any linkage to water quality monitoring?	Description/Abstract	Other Notes	Shows Clear Postive Trend in Awareness, Behaviors, or WQ	Explanation	Project Within Bay Watershed	Evidence of Statistical Analysis Provided	Type of Analysis (if provided)
Health Canada. n.d. *Healthy Lawns 2004 Homeowner Survey Report to the Healthy Lawns Working Group* . Health Canada. Accessed February 2015. http://cfpub.epa.gov/npstbx/files/CAN_HLHomeownerSurveyReport2004e.pdf.	Health Canada ND.pdf	Fertilizer reduction	N/A	Multiple, please list	Change in awareness, perception or attitude; Change in rate of actual target behavior	N/A	When asked about whether they had changed their lawn maintenance practices as a result of information on the Healthy Lawns Web site, the majority (44%) of respondents indicated that they had not changed any of their practices. When asked whether they will change their lawn maintenance practices as a result of information on the Healthy Lawns Web site, 73% of respondents indicated they would change one or more of their lawn care practices. Of those who indicated they would change practices, the majority (32%) indicated they would reduce their reliance on lawn care pesticides. Of those who indicated they would change their practices, most (28%) indicated they would change their aerating practices, and 27% indicated they would change their feeding practices. The distribution of responses is shown in Figure 3 of the report. Twenty one comments were received in response to this question. Eight commenters indicated that they have already used or always use the types of practices described on the Healthy Lawns Web site while six other respondents indicated that they will or probably will change their practices. Five respondents indicated that they were uncertain about whether they would change practices. One respondent commented that they don't use pesticides and another endorsed homeowner education and the best means to achieving safe pesticide use.		Y	Positive trend in change in intention.	N		
Hutton, B. 2014. *Clark County's NPDES Phase I Stormwater Management Effectiveness Monitoring: Targeted Environmental Outcome* s. Final Report. Clark County Department of Environmental Services, Clean Water Program, Clark County, WA.	Hutton 2014 - Outcomes.pdf	Fertilizer reduction	N/A	Multiple, please list	Change in awareness, perception or attitude; Change in rate of actual target behavior; Change in concentration or loads in urban stormwater	This report evaluates the effectiveness of this outcome by testing the hypotheses of significant reductions, between pre- and post- education periods, in monitored stormwater's median fertilizer nutrient and pesticide levels at the downstream portion of the study area's stormwater collection system.	Findings: • Rank-sum statistical tests show that 2 of 13 monitored parameters, herbicide dichlobenil and nutrient nitrate-nitrite as N, had statistically significant decreases in their median concentrations from pre- to post- education periods. 75% of dichlobenil's concentrations were less than the lab's reporting limits and below Ecology's MRL upper target range; suggesting all low values. • Similarly, the National Stormwater Quality Database excludes summary statistics about organics (including pesticides) because they were mostly all not detected in various Phase 1 studies. However, HDR's entire pre- and post- education median nutrient concentrations appeared to be lower than those found nationally. • The rank-sum test results show statistically significant increases in the medians between pre- and post- education periods for both ortho-phosphorus as P and total phosphorus concentrations. However, graphical boxplot summaries suggest the differences in median concentrations are not substantial for ortho-phosphorus. • Of all the monitored parameters, the only difference in the median loads that tested as significant was also an increase from pre- to post education period total phosphorus median loads. Again, boxplots suggest the general tendency of this loading difference is not substantial nor of practical significance. • Generally the water quality monitored storm volumes were similar for the pre- and post- education periods and their median values did not appear to be significantly different. The overall similarity in the two periods' storm volumes suggests that differences between them are unlikely to be a substantial driver or confound analyses of differences in median loads. Overall, this study showed that monitored nutrients and especially pesticide concentrations were relatively low, with most pesticides results below the laboratory's most sensitive detection limits. Statistical testing required focusing on results after 2010 that had more than 30% detected values. In addition to using robust nonparametric statistics, graphical exploratory analyses provided insights into the practicality of statistically significant differences between pre- and post- education period results. The study area's education campaign may have helped protect water quality. While a statistically significant reduction was found in the herbicide dichlobenil, it's not possible to link it to the education campaign due to other potential causes and the study's limited scope. Also, significant reductions found in nitrate-nitrite and increases in total phosphorus concentrations or loads are not of practical significance and may be due to a range of causes unrelated to the education campaign. Frequent nondetected pesticide results limit feasibility of statistical analysis of effectiveness for this and future projects.	Learn more about the outreach campaign and behavior changes by reviewing the first entry for "Clark County, Felida Neighborhood"	Y	Possible water quality improvements, but variables prevent direct proof.	N	Y	Mann-Whitney rank-sum statistical analysis on medians
ICA. 2014. *2014 Consumer Study* . International Carwash Association, Inc., Chicago, IL.	ICA 2014.pdf	Car washing	N/A	Change in rate of actual target behavior	N/A	N/A	The International Carwash Association has been measuring where vehicles are washed most frequently since 1996, and the use of professional car washes continues to grow each year. In the 2014 study, professional car washing was used most frequently among 71.6% of consumers (up from 68.2% in 2011). Although the study proves more people use professional carwashes than ever before, there was no way to determine the reason for this. Their WaterSavers campaign probably contributed to some of the increase but there is no way to know for sure. The consumer outreach campaign resulted in more than 100 million total impressions through digital advertising buys, Facebook campaigns, Blogger outreach and pre-packaged press releases. The most recent PR campaign produced more than 46 million impressions with the pre-packaged press releases and more than 5.4 million blogger impressions. Those blogger impressions also resulted in more than 89,000 giveaway entries, meaning consumers were engaging with the WaterSavers brand. The digital advertising buy produced more than 7.4 million impressions and more than 28,000 clicks to the WaterSavers locator. The first PR campaign produced more than 36 million impressions across 1,100 print/online placements for the prepackaged press release and more than 1.1 million impressions on more than 29 blogs with more than 80,000 giveaway entries.	ICA would only provide the executive summary since I am not a member of the association.	N	Positive correlation between outreach campign and % of people using car washes, but not causation.	N		
Island County Public Health. 2014. *Maxwelton Bacteria Source Identification Education/Outreach Final Survey Results* . Island County Public Health, Coupeville, WA.	Island County Public Health.pdf	Septic system maintenance	N/A	Change in awareness, perception or attitude	N/A	N/A	The project goal is to improve surface water quality in the Maxwelton watershed to ensure that shellfish in Useless Bay are safe for recreational harvest. To evaluate project outreach effectiveness, watershed resident surveys were scheduled prior to, during and after education and outreach efforts (website, community meetings, printed materials, trainings/workshops) to monitor community understanding regarding watershed function, health and protection. Education and outreach efforts appear to have increased the knowledge of respondents about the septic system inspection requirements. Knowledge that inspections were required increased by 7% from 2012 to 2014, and knowledge of the timing of inspections increased by 20%. Most respondents (90%) report that they have performed some type of maintenance or inspection in the last two years. Island County and its partners have made significant progress toward meeting the education goals of the Maxwelton Bacteria Source Identification Project. They have exceeded the goal of increasing awareness of water quality concerns by 25%, and 39% of respondents have attended Septic 101, either online or in person. The attitude of respondents towards septic system maintenance and inspection requirements is difficult to measure. Due to limitations of space on the survey, they could not explore the question in depth by asking direct questions about whether respondents like inspection requirements or feel that they are needed. Within the confines of this survey, there is no way to know for sure whether attitudes have improved. They do know, however, that by the time the interim survey was performed in 2013, the majority of Maxwelton residents were aware of the regulations requiring inspections, but they still appeared unwilling to inspect their systems without the threat of enforcement. The margins of error for both surveys were large, 8% and 6% respectively, meaning that the assumptions about changes in response between the two surveys could be off by up to 14%. This makes it difficult to tell whether some smaller changes seen between the two surveys are real or the result of an inadequate response rate.		N	Some increase in knowledge, but no data on behaviors or water quality.	N	Y	No description of method provided
Jason, L.A., and E.S. Zolik. 1980. Follow-up data on two dog-litter reduction interventions. *American Journal of Community Psychology* 8(6):737–741.	Jason and Zolik 1980.pdf	Pet waste pick up	N/A	Change in rate of actual target behavior	N/A	N/A	Follow-up data from Jason et al 1979 gathered 25 months after study end, indicated that there was a 69% reduction in dog litter in an 8 X 5 block area surrounding the intervention site, and an 89% reduction on the block where the intervention occurred. Follow-up data from Jason et al 1980 study indicated that in the 4 X 2 block area- surrounding the target area, there has been an overall 85% reduction in dog litter, and a 94% reduction in the target site of the intervention.		Y	Dramatic increase in pet waste pickup.	N		
Jason, L.A., E.S. Zolik and F.J. Matese. 1979. The effect of sign prompts and modeling on encouraging dog owners to pick-up dog droppings. *American Journal of Community Psychology* 7(3):339–351.	Jason et al 1979 - Prompting.pdf	Pet waste pick up	N/A	Multiple, please list	Change in awareness, perception or attitude; Change in rate of actual target behavior	N/A	Findings indicated that during base line only 5% of dog owners picked up after their dogs and over 19 pounds of dog defecations were accumulated on a section of a city block in 1 week. Intervention utilizing signs had little impact; however, introduction of instructions and modeling led to over 80% of the dog owners picking up after their dogs defecated. During a reversal phase, pick-ups decreased somewhat, and upon reintroduction of instructions and modeling, pick-ups again increased. There was a noticeable decrease in dogs observed when the modeling phase was implemented. Whereas 165 dogs were counted during the first base-line condition, only 116 were observed during the first bag intervention, a 30% reduction. Some dog owners, perceiving the modeling condition as aversive, walked their dogs in nontargeted areas. Consequently, at least part of the reduction in defecations resulted from owners walking their dogs elsewhere. The dog owners who avoided the target areas probably were the ones most resistant to changing their habits. In other words, the bag intervention is probably effective only with owners who are not put off by the technique. While this finding limits the effectiveness of the experiment, it still does not detract from the fact that of the 70% of owners who walked their dogs in the target area, over 80% picked up during the bag intervention.		Y	Positive behavior trends due to pet waste pickup modeling.	N		
Jason, L.A., K. McCoy, D. Blanco, and E.S. Zolik. 1980. Decreasing dog litter: Behavioral consultation to help a community group. *Evaluation Review* 4(3):355–369.	Jason et al 1980.pdf	Pet waste pick up	N/A	Change in rate of actual target behavior	N/A	N/A	From 8:00 a.m. to 5:30 p.m., three to four members, in two-hour shifts, patrolled the streets. During the intervention, two Chicago aldermen helped distribute bags during one shift. Committee members approached dog owners and followed a specific script saying "Hi. We're from Southeast Lakeview Neighbors. Are you aware of the new ordinance about carrying a receptacle to clean up after your dog?"; Following an answer, the worker replied, "Here is a copy of the new ordinance. Would you like some newspaper or a plastic bag in case you don't have anything with you?"; If the bag was taken or the owner had a bag, the worker said, "Thanks for keeping the streets clean."; If the bag was refused, the worker said, "We just want everyone to be aware of the new ordinance so we can keep our neighborhood clean." Defecations were collected and weighed on nine mornings prior to the intervention and six mornings after the intervention. Before the intervention, an average of 36 droppings weighing 6.8 pounds was deposited on the streets daily. Following the intervention, there was an average of 33 droppings weighing 6.3 pounds. Three and a half months following the first intervention, a second intervention was planned and followed a similar protocol as the first intervention; however, by this time the city had posted a metal sign in the target area informing owners that by not removing animal litter they may be subject to a $200 fine. Posting of the sign was not part of the planned intervention. During the baseline phase, no dog defecations were picked up. With implementation of the intervention, pick-up behavior increased to 87%.One month following the intervention, rates of defecations in the target area had been decreased by 88% (216 droppings were counted before the first baseline phase and 27 during the follow-up).		Y	Positive behavior trends due to pet waste pickup modeling.	N		

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JD Franz Research, Inc. 2000. *State of California Integrated Waste Management Board: Grasscycling Follow-up Survey* . Final Draft Report. JD Franz Research, Inc., Sacramento, CA. Accessed February 2015. http://cfpub.epa.gov/npstbx/files/Grasscycle.pdf.	Franz 2000.pdf	Grass/leaf maintenance	N/A	Multiple, please list	Change in awareness, perception or attitude; Change in rate of actual target behavior	N/A	The largest groups in every area said they put out grass clipping for green waste recycling (40 percent in the Bay Area, 38 percent in the Inland Empire, and 48 percent in Los Angeles County). Also in every area, the second largest groups said they put the clippings in the trash (20 percent, 26 percent, and 28 percent, respectively). These numbers all improved post survey.	Refer to the report for additional result details. Put "combination" for the outreach method because it did not say in the report.	Y	Positive trends in behavior change.	N		
Jones, M., and B. Bruyere. 2004. Frontcountry Leave No Trace Program Evaluation, City of Boulder Open Space and Mountain Parks. Presented at International Symposium on Society and Resource Management, June 5, 2004, Keystone, Colorado.	Jones and Bruyere 2004.pdf	Pet waste pick up	N/A	Change in awareness, perception or attitude	N/A	N/A	A pre/post study was conducted in 1999 of city of Boulder Open Space visitors to determine if their knowledge and behavior changed following a "front country" Leave No Trace educational effort. Respondents were asked Leave No Trace knowledge and behavior questions at trailheads. Visitors were then contacted at the same trailheads to educate them about Leave No Trace principles. A brochure was handed out to reinforce the contact. Signs were placed. Respondents were surveyed later to again measure their Leave No Trace knowledge and behaviors. Surveys were also analyzed to determine whether central or peripheral routes of communication appear to be a more compelling approach. Additionally, results were compared by user group, age, and frequency of visits to open space, gender, and years living in the county. Results indicate that Leave No Trace knowledge did increase, albeit minimally, and only differed significantly by gender. Overall, Leave No Trace knowledge was considerably high before the treatment. Also, familiarity with regulations was more predictive of whether an individual actually practiced Leave No Trace behaviors than was one's Leave No Trace knowledge or time spent thinking about specific Leave No Trace behaviors. This indicates that Leave No Trace educational or central route, efforts may not be as effective as other strategies in changing behavior when visitors are already highly knowledgeable of Leave No Trace principles. More effective strategies likely include raising awareness of consequences of non-compliance, social desirability of compliance and heuristic approaches that trigger individual reaction. Thirty-six percent of respondents indicated that they perceived their Leave No Trace behavior to be "somewhat" or "much" better following the Leave No Trace outreach effort. It is important to note that self-reports such as this survey are often affected by social desirability and an inclination to answer favorably. The increase in averages from 5.32 to 5.46 is considered statistically significant, meaning a true increase in Leave No Trace knowledge appears to have occurred. However, the difference (.014) represents an approximate 2% gain overall. From both a practical and management implication perspective, the increase in knowledge is relatively weak following the outreach campaign.		N	No major increase in awareness or behavior change.	N	Y	SPSS (t-test, cross tabs, chi-square, analysis of variance, multi-regression)
Kerr and Downs Research. 2011. *Final 2011 Fertilizer Pre- and Post-Advertising Campaign Survey Study* . Prepared for Southwest Florida Water Management District by Kerr and Downs Research, Tallahassee, FL. Accessed February 2015. http://www.swfwmd.state.fl.us/files/database/social_research/36/Kerr_and_Downs_Fertilizer_Campaign_Full_Report_Final_V07282011..pdf.	Kerr and Downs Research 2011.pdf	Fertilizer reduction	N/A	Multiple, please list	Change in awareness, perception or attitude; Change in rate of actual target behavior	N/A	The primary focus of the campaign was to change attitudes and behaviors of people who are responsible for fertilizing their own lawns. The following messages were the critical messages in the advertising campaign: (1) Use slow-release fertilizer; (2) Always read and follow package directions, and (3) Don't fertilize before a heavy rain. The District set the following specific knowledge objectives for its advertising campaign: Increase residents' knowledge of proper fertilizing techniques by 10% , more specifically: (1) Increase by 10% the percentage of residents who know that they should read and follow fertilizer package instructions; (2) Increase by 10% the percentage of residents who know they should use slow-release fertilizer; and (3) Increase by 10% the percentage of residents who know they should not fertilize before heavy rain. The first objective was not achieved as 70% of residents prior to the campaign knew they should read and follow package instructions; this percentage actually decreased by 1% during the campaign. The campaign just missed on achieving the second objective in that there was an increase of 8% of people who knew they should use slow-release fertilizer. The third objective was easily met as the percentage of residents who knew they should not fertilize prior to a heavy rain increased by 56% as a result of the advertising campaign. The District also set three specific behavioral objectives, which included: (1) Increase the percentage of residents who read and follow package instructions by 5%; (2) Increase the percentage of residents who use slow-release fertilizer by 7% ; and (3) Decrease the percentage of residents who fertilize before heavy rain by 10% . The campaign did not meet the first objective, in part because the percentage of residents who read and followed package instructions was so high prior to the campaign (88%). The campaign helped raise this percentage to 89% . The advertising campaign just missed fulfilling the second objective as the percentage of residents who used slow-release fertilizer increased 5% during the campaign. The third objective was easily met as the percentage of residents who fertilized before heavy rain dropped 43% during the advertising campaign. Beyond the six explicit objectives set by the District, the advertising campaign was successful in changing other knowledge levels, attitudes and behavior as shown in the summaries on pages 5-8 of the report.		Y	Increases in awareness and behavior reported.	N	Y	No description of method provided
Krieg, J., B. Harsoch, and L. Clark. 2011. *Evaluation of Snohomish County's Septic Care Pilot Program* . Western Washington University, Office of Survey Research, Bellingham, WA.	Krieg 2011.pdf	Septic system maintenance	N/A	Change in awareness, perception or attitude	N/A	N/A	OSR examined three mutually exclusive groups of Snohomish County Residents: those who were part of the County Health Department Sanitary Survey (Sanitary Survey group), those who part of the County Health Department direct mail campaign (Mailer group), and those who were in neither (control group). Both the Mailer program and the Septic Survey program generated statistically significant increases in septic system knowledge. However, these programs appeared to make little difference in the behavior of users of septic systems.		Y	Clear large increases in knowledge as a result of mailers and septic surveys, however, no measurable behavioral response relative to the control group.	N	Y	5% rule of thumb
Landers, J., P. Mitchell, B. Smith, T. Lehman, and C. Conner. 2006. Save the crabs, then eat 'em: A culinary approach to saving the Chesapeake Bay. *Social Marketing Quarterly* 12(1):15–28. Accessed February 2015. http://www.christopher-conner.com/wp-content/uploads/2011/02/social_marketing_quarterly.pdf.	Landers et al 2006.pdf	Fertilizer reduction	N/A	Multiple, please list	Change in awareness, perception or attitude; Change in rate of actual target behavior	N/A	The Academy for Educational Development, a nonprofit organization specializing in social change communications, implemented a campaign to reduce nutrient pollution flowing into the Chesapeake Bay from the greater Washington D.C. area. Funded by the Chesapeake Bay Program, the primary campaign goal was to convince area residents not to fertilize their lawns in the spring, when fertilizer runoff is most damaging to the Bay, but to do so in the fall, if at all. For the 16% of residents who hire a lawn service, the goal was to convince them to hire a Bay-friendly partner lawn service. To overcome message fatigue from previous Bay-oriented campaigns and motivate this urban audience with a meaningful connection to the Bay, the campaign message was framed not as an environmental appeal, but as a way to ensure the continued availability of Chesapeake Bay seafood. Television, newspaper, and out-of home ads ran for a seven-week period during March and April 2005. In spite of a small budget, a post-intervention survey showed increased awareness of lawn care behaviors that contribute to Bay pollution, and decreased intent to fertilize in the spring. Post-campaign survey data suggest that some people heard and retained the basic message of the campaign. When those who reported hearing something about fertilizer use and the Bay were asked what they heard, 38% said they'd heard that they should not fertilize in the spring, and/or that they should put off fertilizing until the fall. Both responses reflected the basic campaign message, and again, these respondents recalled the messages without being given any prompts. Post-campaign survey data suggest that the campaign may have influenced some people's decisions regarding whether or not to fertilize their lawns at all in 2005. In the 2004 pre-campaign survey, 23% of respondents reported that they were not planning to fertilize their lawn at all that year, while 28% of those in the 2005 post-campaign survey reported that they were not planning to fertilize their lawn. A statistically significant difference also emerged post-campaign, such that 30% of those who were exposed to the campaign reported they were not planning to fertilize their lawn at all in 2005, compared to only 22% of those not exposed to the campaign (P<0.05, Fisher's exact test).	Refer to Landers report for additional results from the campaign; Also see Chesapeake Bay Social Marking Initiative 2005	Y	Positive trend in behaviors and statisically significant change in intentions.	Y	Y	Fisher's exact test of independence
Grand Valley Metropolitan Council. 2008. *Lower Grand River Watershed Implementation Project: January 1, 2005 through August 30, 2008* . Grand Valley Metropolitan Council, Michigan Department of Environmental Quality, Grand Rapids, MI.	Michigan DEQ 2008.pdf	Pet waste pick up	N/A	Multiple, please list	Change in rate of actual target behavior; Change in concentration or loads in urban stormwater	Resulted in 7.916x1010 Fecal Coliform colonies/day reduction.	Document summarized goals met by the Federal Clean Water Act Section 319 Grant Program implemented activities. As part of newly implemented best management practices to install pet waste stations in the City of Grandville (8 stations), City of Kentwood (6 stations), City of Wyoming (7 stations), and Coldwater River Watershed (2 stations) the program noted 7.916x10^10 fecal Coliform colonies/day reduction.		Y	Measured reduction in fecal coliform	N		
Miller, T. n.d. Private Well and Septic System Management Education. University of Maryland Cooperative Extension, Queenstown, MD.	Miller n.d.pdf	Septic system maintenance	N/A	Change in rate of actual target behavior	N/A	N/A	Workshops were presented to more than 1500 homeowners each year throughout the State of Maryland. Participants are taught ground and surface water hydrology (using a visual groundwater model), how they affect water quality, and well and septic system management (using PowerPoint Presentations). Information is also provided on handy file folder format fact sheets.	Melissa D. sent Daphne Pee, contact listed online for the workshops, an email inquiry. Could also contact Miller for his paper.	N	Not enough information provided.			

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Montgomery County. 2014. *Public Outreach and Stewardship Workplan. Practice #1: Pet Waste Management. Project: Pet Waste Stations in Rock Creek* . Montgomery County, MD.	Montgomery County 2014.pdf	Pet waste pick up	N/A	Change in awareness, perception or attitude; Change in rate of actual target behavior	N/A	Yes	Report summarized results of the pilot study constructing dog waste stations in Rock Creek. Over the one year pilot project 1,826 pounds of pet waste was collected. The largest pet waste producer was the 200 single family homes HOA community, followed by the Pool community, and then the community of townhomes (50 individual households). Studies have shown that a single gram of dog feces contains 23 million fecal coliform bacteria. In this project 1,826 pounds of waste was collected, preventing 20,000,000,000,000 fecal coliform bacteria from entering our waterways! In addition, 105 lbs of Nitrogen and 14 lbs of Phosphorous (nutrients) were prevented from entering our waterways. Although preventing bacteria and nutrients from ending in our waterways is significant and important, one of the key finding during the one year pilot was information about what motivates individuals to pick up after their pet.		Y	Noted estimated reductions in fecal coliform bacteria, N, P.	Y		
Neponset River Watershed Association and Walpole Septic Maintenance Task Force. 2006. *Report and Recommendations of the Walpole Septic Maintenance Task Force* . Prepared for the Massachusetts Department of Environmental Protection by Neponset River Watershed Association and Walpole Septic Maintenance Task Force, Canton, MA.	Neponset River Watershed Association 2006.pdf	Septic system maintenance	N/A	Change in rate of actual target behavior	N/A	N/A	Goal of the project was a change in planned behavior and increased number of pumpouts. Since 1996 the Walpole Health Department has implemented a number of septic maintenance outreach activities including database development, assistance in financing septic replacements (i.e., loans), educational mailings, cable shows, and material distributed at Household Hazardous Waste Collection Days. The Health Department uses its database to track septic tank pumping and repairs and replacements at individual homes. In 2004 NepRWA and Walpole began a door-to-door septic maintenance education campaign and undertook other outreach efforts financed by the same DEP grant that funds the examination of Septic Systems. The door-to-door canvass reached 600 septic households, with 494 of them pledging to pump their tanks every two to three years. Literature, as well as "reminder" kitchen magnets, were distributed during the canvass. Follow up postcards and phone calls were made to "pledgers" and a mailing was sent to all septic owners. Unfortunately, the Walpole Health Department computer system did not keep accurate, up-to-date pumping records. Therefore, it was not possible to conduct a conclusive quantitative analysis using this approach because of significant structural problems with the Walpole Septic Database. The database does show a dramatic increase in the overall septic pumping rate between the 2002 to 2004 base period and the 2005 through 2007 period using projected figures based on the first five months of 2007. The database indicates that pumping at least doubled and in several years nearly tripled during relative to the base period. "While this general trend seems to suggest that outreach efforts may have had a positive impact, we can't confidently state this as a conclusion due to problems with the database."	Executive Director at the Neponset River Watershed Association said that nothing further happened on the project. He stated in an email that the lack of accurate record keeping by the Board of Health made objective evaluation impossible. The whole project was funded by a 319 grant. Report was prepared for: MA DEP Project # 2002-05/319 Neponset River Watershed Bacteria TMDL Implementation Project	N	No data to track behavior changes.	N		
Pelegrin Research Group. 2004a. *Storm Water Pilot Test Evaluation Report* . Prepared for Los Angeles County Department of Public Works, and Ogilvy Public Relations Worldwide, by Pelegrin Research Group, Inc., Glendale, CA.	Ogilvy Public Relations Worldwide 2004.pdf	Multiple, please list	Pet waste pick up; Grass/leaf maintenance	Change in rate of actual target behavior	N/A	N/A	In 2003 and 2004, Ogilvy Public Relations was commissioned by the Los Angeles County Department of Public Works (DPW) to design and implement a County-wide program to educate the public and change behaviors that contribute to storm water pollution. As part of this program, communications were developed for residents in a select County area to evaluate the communications' effectiveness in raising residents' general awareness of storm water and neighborhood pollution and specific behaviors that contribute to it and encouraging residents to change storm water and neighborhood pollution behaviors. Pre and post education campaigns were conducted in 2003 and 2004. In 2003, a total of 601 telephone interviews were conducted in two waves – 300 prior to residents' exposure to the pilot test communications (pre-wave) and 301 following exposure to the communications (post-wave). In 2004, a total of 800 telephone interviews were conducted across two waves, including 400 prior to residents' exposure to the pilot test communications (pre-wave) and 400 following exposure to the communications (post-wave). In the 2003 and 2004 follow-ups, almost three-in-ten residents report changing their behavior in the past two months, with half of these residents properly throwing away trash and litter (50%) and a quarter disposing yard waste in the proper manner (29% in 2003 post survey results, 25% in 2004 post survey results), a notable increase from the pre-campaign level (17-18%). Pre and post campaign results for picking up dog waste did not significantly change in response to the media outreach. In 2003 response rates for "picking up dog droppings every time you walk your dog" were 87% pre and 92% post campaign. In 2004 results were 90% pre and 87% post campaign.		N	No significant change in pet waste pickup behavior. Increase in proper yard waste behavior but no focus here on fertilizer.	N	Y	No description of method provided
O'Hara, N. n.d. *Pooches for the Planet: Clean Waters. Clean Yards. And Clean Shoes* . Tampa Bay Estuary Program, St. Petersburg, FL.	O'Hara ND.pdf	Pet waste pick up	N/A	Change in rate of actual target behavior	N/A	N/A	Community members staffed an information station to distribute educational information and answer resident questions. The campaign attributes the following successes to the outreach effort: -Number of dog poop piles in Rivercrest Park decreased 35% from baseline survey to second survey in October (after 3 months of outreach). -Piles decreased another 10% percent from November-February. -Final survey in May showed another slight decrease, about 3%. -Number of dog poop piles in the linear park (greenway) increased by 25 % over the initial survey period, then decreased by 20% following installation of pet waste bag stations.		Y	Postive behavior trend.	N		
Orscheln, N. 2012. *Lexington County's Green Car Wash Campaign: Connecting Local Businesses with Stormwater Outreach* . Clemson University Cooperative Extension, Clemson, SC. Accessed February 2015. http://www.clemson.edu/extension/county/lexington/accomplishments.html.	Orscheln 2012 (1).pdf and Orcheln 2012 (2).pdf	Car washing	N/A	Multiple, please list	Change in awareness, perception or attitude; Change in rate of actual target behavior	N/A	The Lexington Countywide Stormwater Consortium (LCSC), coordinated by Clemson Extension Carolina Clear, established a Lexington County Green Car Wash campaign. The objective of campaign is to increase knowledge and ultimately change behavior to improve water quality by connecting local car washes with community organizations wishing to conduct car wash fundraisers. In order to reach this objective, the LCSC provided professional car wash facility vouchers to local car washes who treat car wash runoff that they could sell to organizations interested in car wash fundraisers. These organizations could then resell the vouchers for a higher cost—achieving their goal of fundraising without having their own car wash that would send harmful pollutants and soap into local rivers and streams. To promote the campaign and impact as many citizens as possible, the LCSC ran ads in local newspapers and magazines, displayed signs and brochures at car wash establishments, and encouraged participation through websites and social media. Seven car wash facilities agreed to sell vouchers and participate in this innovative program. The most direct outcome and measure of success in this campaign can be measured by the number of vouchers redeemed. In six months, car wash businesses reported redeeming over 1,000 clean car wash vouchers. Recipients of the vouchers included churches, schools, and scouts. It is difficult, however, to measure some of the indirect outcomes, such as the decision of residents to not hold a fundraising car wash and instead choose another fundraiser. We are also unable to count how many people saw the flyers displayed at the seven car washes, the ads in local papers, and the LCSC website, and decided to take their car to a professional car wash facility instead of washing their car at home. Residents could have also changed their behavior by washing their car on the grass or other permeable surface (which would limit runoff). Finally, the car wash program itself was a program that raised awareness about stormwater pollution in general—from the car wash owners, to organizations seeking fundraising vouchers, and to the general public who were exposed to the outreach materials. Based on follow-up interviews, local car wash owners participating in this campaign would like to continue their partnership with Clemson Extension in the Clean Car Wash campaign. All car wash owners stated that the program was effective, with anecdotal evidence that they had seen a decrease in car wash fundraisers held in local parking lots. Car wash owners have also proved to be very valuable partners in that they have offered innovative ideas on how to continue to change behavior such as establishing ordinances, strengthening outreach and advertising, and educating local law enforcement.		Y	Increase in number of people using car washes when vouchers are provided.	N		
Pelegrin Research Group. 2004b. *Storm Water Public Education Program Resident Population Telephone Survey—2004 Evaluation and Next Steps* . Prepared for Los Angeles County, California State Water Resources Control, and Rogers & Associates by Pelegrin Research Group, Inc., Glendale, CA.	Pelegrin Research 2004.pdf	Multiple, please list	Pet waste pick up; Fertilizer reduction	Change in rate of actual target behavior	N/A	N/A	The campaign utilizes a strategic mix of multi-media advertising, community outreach, media relations, corporate and non-profit partnerships, special events and community, school and business outreach. The report provides the findings from the most recent (2004) campaign evaluation survey and also includes data from the 1997 baseline and 2001 studies for comparative purposes. Household-based lawn/garden maintenance activities that contribute to storm water pollution, are engaged in by about one-sixth of residents and have generally increased, suggesting opportunities for future campaign efforts that target these sources of storm water pollution. Failing to clean up dog waste appears has held steady since 2001, suggesting that the current ads targeting this behavior reinforced previous gains but did not produce additional behavior change. However, the largest variation in responses over time was observed in the very worst offenders surveyed (identified as "rubbish rebels" in the report). In this category, the respondents who indicated walking a dog without picking up the droppings decreased from 24% in 1997, to 5% in 2001, before increasing again to 13% in 2004.		N	Incidence of non-pickup of pet waste decreased at first, and then increase again, but still lower than in original survey.	N	Y	No description of method provided
Comprehensive Environmental, Inc. n.d. *Stump Pond Brook Subwatershed Community Based Social Marketing: Fertilizer Reduction Program Implementation & Results* . Prepared for Pennichuck Water Works by Comprehensive Environmental, Inc., Merrimack, NH. Funded by Pennichuck Water Works, Merrimack, NH and New Hampshire Department of Environmental Services, Concord, NH. Accessed February 2015. http://www.pennichuck.com/report/13-CBSM-Report.pdf.	Comprehensive Environmental n.d.pdf	Fertilizer reduction	N/A	Multiple, please list	Change in awareness, perception or attitude; Change in rate of actual target behavior	N/A	When asked if respondents will reduce the amount of fertilizer as a result of the CBSM program, 89 percent of respondents that fertilize their lawn indicated that they used less fertilizer this summer or plan on using less fertilizer next year, while 11 percent plan on using the same amount. When asked about fertilizer type, results were similar with 90 percent of respondents that fertilize their lawn and do not already use a slow release, low phosphorus or organic lawn fertilizer indicating that they have or will change to one as a result of the CBSM program. As discussed above, 66 of those residents surveyed took advantage of the free soil test offer or approximately 11 percent of the total number of households. Of the survey respondents, 67 percent completed a soil test as a result of the CBSM program or plan to do one next year, while 28 percent did not or do not plan on doing a soil test. When asked if additional information was needed to complete a soil test and determine proper fertilizer use, 22 percent indicated yes. Further discussion of survey results are provided following each CBSM activity in the report.	Refer to Appendix J for full post survey results.	Y	Positive trends in behavior changes.	N		

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Puget Sound Action Team. 2004. *Serving Puget Sound with PIE: Success Stories from the Puget Sound Action Team's Public Involvement and Education Program* . Publication # PSAT04-02. Puget Sound Action Team, Olympia, WA.	Puget Sound Action Team 2004.pdf	Septic system maintenance	N/A	Change in awareness, perception or attitude	N/A	N/A	The 30-second PSAs aired on 15 networks between five and 11 times each day for about eight months. A total of 1,350 PSAs aired in Skagit County to about 23,800 subscribers. Have the PSAs made a difference? Though the county couldn't show a direct link, after the PSAs aired, 596 people signed up for the health department's "Septics 101 Clinic." Staff said they felt the PSAs helped fill the workshops.		N	No before and after data to track behavior changes.	N		
Research Dynamics, Inc. 2000. *Marketing Research Study for City of Memphis Environmental Engineering: Survey of Memphis Consumers' Opinions About Stormwater Pollution* . Prepared for the City of Memphis Environmental Engineering Department by Research Dynamics, Inc., Memphis, TN.	Research Dynamics 2000.pdf	Multiple, please list	Pet waste pick up; Fertilizer reduction; Grass/leaf maintenance	Change in rate of actual target behavior	N/A	N/A	Memphis residents' awareness and opinions about stormwater pollution and other environmental issues were measured before and after an education campaign through a marketing research study. Approximately 400 telephone interviews were conducted in 1999 survey and 250 were conducted in the 2000 survey. Pet waste pick up rates did not have a noticeable change pre and post campaign. The 23% of respondents in this 2000 survey who do clean up after their pet and the 14% who don't compared nearly identically with the 23% of 1999 survey respondents who said they do clean up after their pet and the 17% who don't. The ways in which survey participants deal with leaves and grass clippings in this 2000 survey were very similar to the responses received in the 1999 survey. In both survey periods, more than two-thirds of the respondents asked this survey question concerning what they do with leaves and grass clippings said they bag leaves and grass clippings for the city to pick up (67% in 1999, 70% in 2000).		N	No significant changes after the campaign.	N		
Regional Stormwater Education Program. 2013. *Communities Working Together to Improve Water Quality* . Press release. Chittendon County Regional Stormwater Education Program, Essex Junction, NH.	RSEP_editorial 2013.pdf	Multiple, please list	Pet waste pick up; Fertilizer reduction; Car washing	Change in rate of actual target behavior	N/A	N/A	For more than ten years, several Chittenden County communities, have worked together to create and operate the Regional Stormwater Education Program (RSEP). This organization is a collaborative effort of nine municipalities, the University of Vermont, the Vermont Agency of Transportation, and the Burlington International Airport. The central mission of RSEP is to educate the public on how stormwater affects our streams and Lake Champlain and the simple things we all can do to improve overall water quality. Together, we have been able to do much more than we would if efforts were town-by-town. Program efforts have included extensive community outreach and education to residents on key behaviors that anyone could do: picking up pet waste, reducing the use of fertilizers and pesticides, testing soils to determine if fertilizers are even needed and greener practices for car washing. Progress is being made and the overall results are promising. In 2013 we surveyed more than 400 residents of the nine RSEP member towns. More than 80% of those surveyed now pick up pet waste compared to only 62% in 2003. Pet waste can be a significant source of bacterial contamination to our streams and Lake Champlain. Similarly, only 29% of the citizens surveyed use fertilizers on their lawn, down from 50% . The program also saw an increase in soil testing to determine whether fertilizers are even needed. Testing soil for fertilizer need saves money, but also prevents unnecessary pollutants from entering our local waters.		Y	Positive trends in pet waste pickup, fertilzer reduction, and soil testing.	N		
SalterMitchell. n.d *Lawn Care Behavior: Crystal River/King's Bay and Rainbow River Final Report* . Prepared for Southwest Florida Water Management District by SalterMitchell, Tallahassee, FL. Accessed February 2015. https://www.swfwmd.state.fl.us/files/database/social_research/31/CrystalRiverPosttestReportv1f_-_FINAL_REPORT.pdf.	Salter Mitchell n.d.pdf	Multiple, please list	Fertilizer reduction; Grass/leaf maintenance	Multiple, please list	Change in awareness, perception or attitude; Change in rate of actual target behavior	N/A	The Southwest Florida Water Management District (SWFWMD) partnered with SalterMitchell, Inc. to evaluate their social marketing campaign and learn more about the public's opinions and attitudes regarding specific target behaviors of residents in the Crystal River/King's Bay and Rainbow River area. This post-test survey was conducted two months after the District launched their marketing campaign. The primary goal of the marketing campaign was to change lawn care behaviors of residents in the Crystal River/King's Bay and Rainbow River area. This report examines citizens' opinions and use of fertilizer as well as serves as an evaluation tool for the District's social marketing campaign. Residents are performing the target behaviors regarding lawnmowers set by the District prior to their social marketing campaign. While there are differences shown when comparing the pretest conducted prior to the District's campaign with this post-test, for the most part, there are many residents maintaining their lawns according to the water-friendly guidelines set by the District. The majority of respondents (68%) reported leaving their grass clippings on their lawn after mowing. This is fairly consistent with the three fourths (71%) of respondents who reported leaving their grass clippings on their lawns in the pre-test. One of the behavioral goals of the District is to get residents to fertilize only twice a year. Residents of the Crystal River area are fertilizing, on average, between 2-5 times/year. According to results of this post-test survey, respondents who pay a lawn care service to care for their lawns apply fertilizer more often than respondents whose lawns are cared for by someone in the household. Those who paid a gardener or lawn service to care for their lawns applied fertilizer an average of 4.27 times in 2007 while respondents whose lawns were cared for by someone in the household applied fertilizer an average of 2.98 times that same year. A similar trend was found in the pre-test survey results. In the pre-test survey, residents who said they hired a lawn service or gardener fertilized an average of 3.42 times in 2007 compared with residents whose lawns were cared for by someone in the household who fertilized an average of 2.18 times. Post-test results show respondents who fertilized least were those whose lawns were cared for by someone in the home and did not report seeing the District's ad. Respondents who hired a lawn service and had seen the District's ad reported applying fertilizer to their lawn an average of 4.56 times in 2007. Respondents whose lawns were cared for by a lawn service and had not seen the District's ad applied fertilizer an average of 4.1 times in 2007. Respondents whose lawns are cared for by someone in the household and had seen the ad reported applying fertilizer an average of 3.26 times in 2007. Respondents whose lawns are cared for by someone in the household and had not seen the ad applied fertilizer an average of 2.88 times in 2007. Respondents were asked to rate on a scale from 1-10, with 1 meaning Strongly Disagree and 10 meaning Strongly Agree, how much they agreed with statements regarding lawn care. Averages were calculated for each one of the statements based on the valid percent of responses and are listed below in descending order. The averages shown in Table 1 indicate that residents have a desire to perform many of the District's target behaviors concerning lawn maintenance. Of the all the statements in this question, respondents most highly related to changing their fertilizer if they learned it was harmful to the environment. Although the data does show some hint of campaign effectiveness overall, there are several limitations to consider when looking at the data, including the fact that the media campaign only lasted for 2 months. and that the campaign only consisted of media ads and billboards.	Refer to the report for additional result details.	N	No significant differences between the surveys. In fact, respondents who had NOT seen the outreach ads fertilized less than those that DID see the ad.	N	Y	SPSS (crosstabs and chi-square)
San Bernardino County. 2013 *San Bernardino County Stormwater Public Education Program Annual Report 2012–2013* . San Bernardino County Stormwater Program, San Bernardino, CA.	San Bernardino County 2013.pdf	Pet waste pick up	N/A	Multiple, please list	Change in awareness, perception or attitude; Change in rate of actual target behavior	N/A	The County's program focused on the issue of pet waste by designing and implementing a behavior change campaign that addressed specific barriers and motivators to encourage dog owners to pick up after their pets. The campaign focused on asking dog owners to carry a visible waste bag. The goal of the campaign was to establish carrying a bag as a social norm and demonstrate a 5% increase in incidences of dog owners picking up dog waste. The campaign employed three intervention tactics to change behavior: messaging to perform the target behavior (e.g., "no excuses!"), the provision of free doggie waste bag canisters, and asking dog owners to sign a pledge to pick up after their dogs. Finally, the campaign incentivized the proper behavior via a Facebook sweepstakes where dog owners could enter to win a pet store gift card for submitting a photo of their dog with a visible waste bag attached to its leash. Dog owners were recruited to participate in the campaign using various channels. To receive a free doggie waste bag canister, dog owners first had to fill out a survey. The survey takers were then contacted after several months with a request to take a follow up survey in exchange for a chance to win a $75 gift card. The county collected 397 baseline and 104 follow up surveys after pet waste campaign was deployed. • Among low-performing dog owners who picked up 90% of the time or less at baseline, incidences of picking up increased by 5.22% at follow-up; • A total of 118 dog owners reported having visible bags, exceeding the goal of 100 dog owners carrying bags in a visible way. • A total of 525 dog owners signed pledges, including 271 public pledges. far surpassing the campaign's goal of obtaining 300 pledges from dog owners; • The survey showed that 65 dog owners reported sharing the campaign in some way. In addition, 43 people helped to establish a social norm by participating in the Pet Photo Sweepstakes and posting photos of their dogs, and 3 people forwarded an e-blast. The total number of people who shared the campaign was 111, exceeding our goal of 100 people by 11%.		Y	Some improvements in pet waste pickup.	N		
Senecal-Albrecht, D. 2009. *Results of a Multi-year Social Marketing Campaign in Northwestern Vermont* . Chittenden County Regional Planning Commission, Chittendon County Regional Stormwater Education Program, Winooski, VT.	Senecal-Albrecht 2009.pdf	Multiple, please list	Pet waste pick up; Fertilizer reduction; Car washing	Change in rate of actual target behavior	N/A	N/A	Results of a July 2008 survey show that 3 out of 4 pet owners throw their pet waste in the trash when on a walk. Two out of 4 leave pet waste on the ground in their yard. Therefore, campaign organizers stated "Minimal additional focus needs to be spent on reinforcing this message since pet owners have adopted the best behavior." However, it should be noted that when comparing survey results from 2003 and 2007, there was no significant change in pet waste disposal practices. Proper disposal was always fairly high even before the campaign. A significant change was reported, however, when it comes to car washing. From 2003 to 2007, survey results showed an increase from 42.8% of those who report never washing their car at home in 2003 versus to 54.9% who reported not washing their car at home in 2007.		Y	Significant increase in those who report they NEVER wash there car at home. Note that this may mean there is a increase in not washing it at all, not necessarily that they are now using a car wash.	N	Y	No description of method provided

Citation	Filename	Targeted Behavior Focus	List of Multiple Behaviors Covered	Change Focus	Change Explanation	Any linkage to water quality monitoring?	Description/Abstract	Other Notes	Shows Clear Postive Trend in Awareness, Behaviors, or WQ	Explanation	Project Within Bay Watershed	Evidence of Statistical Analysis Provided	Type of Analysis (if provided)
Shay, K. 2011. *Austin Lawn and Garden Chemical Education Campaign: Final Report* . City of Austin, TX. Accessed February 2015. http://www.austintexas.gov/watershed_protection/publications/document.cfm?id=196472.	Shay 2011.pdf	Fertilizer reduction	N/A	Multiple, please list	Change in awareness, perception or attitude; Change in rate of actual target behavior; Change in concentration or loads in urban stormwater	Changes in water quality after education were not consistently observed, and stormwater assessment was complicated by a lack of qualifying runoff events in 2011.	Survey results indicate improvement in landscape practices from education. The majority of neighborhoods surveyed exhibited a positive behavioral response to education and indicated a decrease in chemical fertilizer use, a decrease in the use of weed-and-feed combined fertilizer and herbicide products, and an increase in use of organic fertilizers. Based on monitoring data, Carbaryl was not detected in any sample and is not a good indicator of landscape chemical runoff at current detection limits. Changes in water quality after education were not consistently observed, and stormwater assessment was complicated by a lack of qualifying runoff events in 2011. Potential changes from education as observed in groundwater monitoring data are mixed. Ammonia decreased at four of five sites in the post-education time period. Nitrate concentrations increased at two springs and decreased at Spicewood Springs. Orthophosphorus concentrations decreased at Backdoor Springs after education and may have decreased after education at Tanglewood, although the statistically significant change at Tanglewood was non-significant (p=0.06). Nitrate concentrations at Backdoor and Tubb springs continue to increase over time, and the observed increases in the post-education period are most likely the result of ongoing urbanization and not caused by the education program. Orthophosphorus concentrations continue to decrease over time at Backdoor Spring. Event mean concentrations from 110 qualifying stormwater runoff events were calculated from monitoring results. There was no stormwater sampling in 2011 due to a lack of sufficient rainfall. The trends for average concentrations of nutrients were similar for all sites. Atrazine was typically not detected in the summer and winter months but was detected at fairly high levels in the spring and fall, which would correspond with periods when lawn fertilizers and chemicals would be applied. Slight trends were seen in nitrogen concentrations similar to those seen in Atrazine. Trends were not detected in phosphorus concentrations. Total nitrogen, nitrate+nitrite, total and dissolved phosphorus concentrations are also higher at Park Place but the difference is not as pronounced (see Figure 16). This could indicate higher fertilizer use at Park Place or the use of different products. This may be due to slightly different demographics or the age of the neighborhood, Legend Oaks being older and more established. The average nutrient concentrations observed at the pilot neighborhood does not differ greatly for the long-term average stormwater concentrations observed elsewhere in Austin. There are no differences in the peak concentrations of Atrazine pre- or post-education but this may be confounded by the different weather conditions. The post-education period appears to have had more rainfall, which may have resulted in additional lawn care activities, education not withstanding.	See report for detailed results (see page 29 and after for monitoring results)	Y	Positive changes in behaviors regarding lawn care.	N	Y	Kaplan-Meiers survival analysis, rank sum test, Wilcoxon signed-rank test
Swann, C. n.d. *A Survey of Resident Nutrient Behavior in the Chesapeake Bay Watershed* . Center for Watershed Protection, Ellicott City, MD.	Swann ND.pdf	Multiple, please list	Pet waste pick up; Fertilizer reduction	Change in rate of actual target behavior	N/A	N/A	The purpose of this report was to profile current nutrient education efforts, their effectiveness at reaching residents, and what outreach methods work best to attract attention and spread the nutrient management message. The report describes two surveys. The first survey was focused on evaluating current behavior, awareness of various outreach efforts, and whether residents had modified their behavior as a result of program efforts. The second survey focused on outreach program specifics (annual budget and staffing, techniques employed, participation rates, innovative programs etc.). In addition, the report also profiled other markets and presented before and after behavior changes statistics as a result of a targeted education or outreach campaign. Lawn care: Survey data indicate that as a result of receiving lawn care advice, 13% of respondents made significant changes to they way they cared for their lawn. Pet waste: Of respondents who did not always clean up after their pet, 44% of those "bad actors" indicated that none of the listed societal influences (e.g., complains of neighbors, fine, sanitary collection method, convenient disposal location) that might encourage pet waste clean-up would influence their behavior. Before and after outreach/education campaign effectiveness results are summarized in tables as secondary sources, citing data and reports for other major cities. The authors use these data to state that outreach/education campaigns can lead to behavior changes.		N	This is a summary of other programs.	Y	Y	No description of method provided
San Francisco Estuary Partnership and Association of Bay Area Governments. 2015. *Clean Vessel Act Education and Outreach Grant Program: Application Summary* . San Francisco Estuary Partnership, Oakland, CA.	San Francisco Estuary Partnership 2015.pdf	Marina pumpout	N/A	Multiple, please list	Change in awareness, perception or attitude; Change in rate of actual target behavior; Change in concentration or loads in urban stormwater	Prevented over 8,800 gallons of sewage from entering California's waterways from a total of 278 vessels.	The San Francisco Estuary Partnership (SFEP) has been working with the State of California Division of Boating and Waterways (DBW), The Bay Foundation, and a vast array of partners in the San Francisco Bay (Bay) and Sacramento Delta (Delta) for two decades to promote clean boating and environmental stewardship to boaters and marinas in the 11 county San Francisco Bay Delta Estuary. During the first 14 years, the program focused exclusively on public education and resource development, and since 2008, SFEP has also conducted a regional pumpout monitoring program. As of today, SFEP has attended over 40 boat shows, and distributed over 250,000 maps to the public at these shows and through annual mail-outs to marinas and boating supplies stores. In addition, SFEP has given over 50 clean boating presentations to marinas, yacht clubs, and boating groups ranging from 10 – 100 participants. In addition to SFEP participation at events and production of printed material, SFEP has worked with DBW to create three clean boating videos on the subjects of oil, fuel, and sewage that have been viewed more than 6,600 times since the first video's upload in 2011. For the past 6 years SFEP has been monitoring approximately 90 pumpouts in the Bay and Delta for their use and condition. The relational database SFEP has developed currently has over 2,600 entries. In addition to collecting information, SFEP also notified marinas of broken or malfunctioning pumpouts, ensured that all pumpouts monitored had the proper signage and that the DBW QR sticker was placed on each unit. Most recently, SFEP has been conducting mobile pumpout events to engage the public in new settings and using new techniques. These events, called Honey Pot Days, serve to introduce boaters to the mobile pumpout service industry in a safe and controlled environment for free and also allow staff to provide participants with clean boating information. To date, these events have prevented over 8,800 gallons of sewage from entering California's waterways from a total of 278 vessels.		Y	Increased usage of boater pumpouts. Estimated how much sewage was prevented from engering waterways based on pumpout usage.	N		
Turner, M. 2005. *Leachate, Soil and Turf Concentrations of Nutrients from Fertilizer: Results from the Stillhouse Neighborhood Fertilizer Leachate Study* . City of Austin, Watershed Protection and Development Review Department, Austin, TX. Accessed February 2015. http://www.ci.austin.tx.us/growgreen/downloads/stillhouse_leachate_study.pdf.	Turner 2005.pdf	Fertilizer reduction	N/A	Multiple, please list	Change in awareness, perception or attitude; Change in rate of actual target behavior; Change in concentration or loads in urban stormwater	N/A	Stillhouse Hollow Spring has high nutrient levels. The nitrate concentration is above the level of concern for aquatic life. Preliminary investigations indicated that the likely source for the high nutrient levels is fertilizer. The neighborhood from which water was expected to enter the aquifer and discharge at the spring was identified. In that neighborhood, a community education project called "Stillhouse Spring Cleaning" was undertaken to educate homeowners in the use of fertilizer that would provide healthy lawns without causing excess nutrients to enter either surface or groundwater. Also, during a six-week study, lawns within the neighborhood were given different fertilizer treatments and examined for leachate, soil and turf nutrient concentrations, and appearance. The six-week study was conducted on nine lawns. After six-weeks the mean nitrate leachate from all treatments was the same. Grass nitrate levels remain in the desired category for all treatments and all soil levels. Soil nutrient levels doubled between January and June for unfertilized plots. Thus a spring application of fertilizer is not needed if soil nutrient levels are high and grass clippings are not collected. Leachate levels are directly related to soil levels. When January soil nitrate levels are below 5 mg/kg, the nitrate leachate from properly applied fertilizer remains below the level of concern for aquatic life.	In the project, residents of the 200 homes near the spring were encouraged to follow Grow Green guidelines. The participants enjoyed many benefits, such as landscaping rebates, neighborhood fire ant treatment and free soil tests, and they got rewards, such as a safer environment, less exposure to chemicals and cleaner water.	N	No discussion in paper about outreach results/correlation	N	Y	No description of method provided
University of Vermont. 2007. *Stormwater Opinions and Behaviors in Chittenden County, Vermont* . University of Vermont, Center for Rural Studies, Burlington, VT.	Univ of Vermont 2007.pdf	Multiple, please list	Pet waste pick up; Fertilizer reduction; Car washing	Change in rate of actual target behavior	N/A	N/A	Survey data comparison survey results from 2003 versus 2007 for Smart WaterWays outreach effectiveness. Significant difference in number of people reporting that they never wash their car at home (% increased from 42.8 to 54.9). However, the percentage of people saying they always wash their car on paved surfaces also increased. Overall no significant difference in fertilizer use found. Significant difference in awareness of the role of septic systems as source of water pollution.		Y	Some increases in good behavior but also in bad behaviors. Clear increase in septic awareness.	N	Y	SPSS (corsstabs and chi-square)
USEPA. 2014. *Case Study: Educating Pet Owners and Gardeners* . U.S. Environmental Protection Agency, Office of Water, Washington, DC. Accessed February 2015. http://water.epa.gov/polwaste/npdes/stormwater/Educating-Pet-Owners-and-Gardeners.cfm.	USEPA 2014 - Austin TX.pdf	Fertilizer reduction	N/A	Multiple, please list	Change in awareness, perception or attitude; Change in rate of actual target behavior	N/A	One of the major messages of the campaign was to reduce the use of combined fertilizer and pesticide products. In post-surveys from the grant pilot neighborhoods, 64% of those who previously used weed and feed products said they had changed their behavior and stopped using the product. In a survey of nursery staff in Austin, 14 out of 16 say that the Grow Green program has affected their sales in 2003 compared to 2002. When asked how sales of the following items have been affected: 14 say sales of plants in the Grow Green Plant Guide have increased; 4 say sales of chemical fertilizers have decreased; 11 say sales of organic or natural fertilizers have increased; 5 say chemical pesticide sales have decreased; and 11 say least toxic/organic pesticide sales have increased When nursery staff were asked if they found the Grow Green sheets helpful, 13 replied that they were very helpful and 7 replied that they were helpful (out of 20). When asked how helpful the Plant Guide has been, 16 replied "very helpful" while 4 replied "helpful" (out of 20).	Also see: TCEQ. 2012. City of Austin: Lawn and Garden Chemical Educational Campaign. Texas Commission on Environmental Quality. https://www.tceq.texas.gov/assets/public/compliance/monops/nps/projects/77054_FS_CityofAustin.pdf	Y	Change in behavior and decreases in fertilizer sales.	N		

Citation	Filename	Targeted Behavior Focus	List of Multiple Behaviors Covered	Change Focus	Change Explanation	Any linkage to water quality monitoring?	Description/Abstract	Other Notes	Shows Clear Postive Trend in Awareness, Behaviors, or WQ	Explanation	Project Within Bay Watershed	Evidence of Statistical Analysis Provided	Type of Analysis (if provided)
West Sound Stormwater Outreach Group. 2012. *2012 Summary of Activities* . West Sound Stormwater Outreach Group, Puget Sound, WA.	West Sound Stormwater 2012.pdf	Pet waste pick up	N/A	Multiple, please list	Change in rate of actual target behavior; Change in concentration or loads in urban stormwater	Approximately 89 tons of dog waste diverted from surface waters as a result of the Mutt Mitt Program in 2012.	A total of 81 new stations pet waste collection stations were adopted and installed by 24 groups, bringing the total up to 294 stations. Citizen groups provided much positive feedback about the program and reported that 286,178 bags were used at community stations. Additionally, Mutt Mitt stations at City and County parks dispensed approximately 254,000 bags. Combined, over half a million bags were used. This represents approximately 89 tons of dog waste diverted from surface waters as a result of the Mutt Mitt Program in 2012.		Y	No before and after results, although high number of bags dispensed. Group estimated amount of dog waste kept from streams by number of bags dispensed.	N		
Wilbur, J. 2006. *Getting Your Feet Wet with Social Marketing: A Social Marketing Guide for Watershed Programs* . Utah Department of Agriculture and Food, Salt Lake City, UT.	Wilbur 2006.pdf	Multiple, please list	Pet waste pick up; Fertilizer reduction; Car washing; Grass/Leaf maintenance	Change in rate of actual target behavior	N/A	N/A	In 2003 and 2004, the Neighborhood Water Stewardship Program and materials from the Empowerment Institute were tested. The program was a partnership of a non-profit organization Arlingtonians for a Clean Environment, Arlington County, the City of Falls Church, and the City of Alexandria. In the program model, trained team leaders invite neighbors to take part in the program, creating a team of five to eight households. The team members participated in five meetings over three months. Participants in the program complete a "before" and "after" assessment, so the program managers can track which new behaviors team members have adopted. A trained coach works with each team, leading some of the team meetings, which helps ensure success of the teams. To date, 45 team leaders have completed the Water Stewardship Program training, and have led 25 teams through the program (or approximately 125 households). Each household on average adopts 6 - 8 new actions, resulting in a total of 581 separate actions to protect water quality or conserve water. These actions have resulted in an annual savings of over 1,800,000 gallons of water. Nationwide results with the original Ecoteam program show household recruitment rate ranging from 20-30%. From the first two years of the program in Northern Virginia, the recruitment rate has been 44%. In 2004, 296 households were invited to participate in the Water Stewardship Program. Of those invited, 44% attended the neighborhood gathering to find out more about the program. Of those households attending the gathering, 81% joined the team, or approximately 100 households. Households participating in the program to date have adopted 581 new actions, such as installing rain barrels, cisterns, rain gardens, reducing pesticide and fertilizer use, and checking vehicles for fuel leaks. However, more households adopted water conservation behaviors over water quality protection behaviors.	Not sure if this program continued past 2004 or not.	Y	Although positive trends were shown, most of the actions that neighbors took were centered around water conservation versus water quality.	Y		
Works, G. 2013. *Summary Report: Educational Materials Evaluation - Huron River Watershed Detection and Rectification of Failing Septics Project* . Prepared for Huron River Watershed Council by Works Associates, Inc., Grand Rapids, MI.	Works 2013.pdf	Septic system maintenance	N/A	Change in rate of actual target behavior	N/A	N/A	HRWC's evaluation goal of the educational portion of this project is to determine whether homeowners implemented corrective measures or suggested best practices as a result of receiving educational campaign materials related to septic systems. Some homeowners would receive information on the relative risk of failure of their specific system as observed during the first part of the study. Their responses will be compared with a control group who will only get educational information and not an indication on the relative risk of failure of their specific system. Secondarily HRWC planned to measure if homeowners receiving the materials report a better understanding of the signs of septic system failure in general as a result of the information provided. The survey was designed to elicit the following information: 1. To determine homeowner response to specific educational materials on septic systems in the form of: actions taken to verify or correct their septic health, changes made incorporating corrective measures or recommended best practices. 2. To measure target audience self-reported improvement in understanding of signs of septic system failure as a result of information provided. 3. To determine if providing individual relative risk of probable failure increases likelihood of response in the form of actions taken to verify or correct their septic health, changes made incorporating corrective measures or recommended best practices. To determine homeowner response to specific educational materials on septic systems in the form of: Actions taken to verify or correct their septic health, Changes made incorporating corrective measures or recommended best practices. 50 respondents reported regular care and/or maintenance of their septic systems, so it appears the self-reported behavior of most did not need the prompting of the educational materials. All 52 respondents reported one or more: regular care of their system, regular maintenance of their septic systems or some type of prompted action or change. Whether the educational materials prompted actions was explored in two questions in the survey. 37 respondents reported that they regularly took actions to verify or correct their septic health. Additionally 17 reported taking a specific action(s) prompted by the materials (4 of these also noted taking regular action to maintain their system). 15 reported doing a visual inspection and 8 either contacted an inspector and/or arranged for a pump out. Three respondents discussed their prompted action in comments. 47 respondents reported that they regularly followed best practices for septic tank care. Additionally 6 reported making specific changes to their practices prompted by the materials (3 of these also reported regular compliance.) 4 used less water, 4 changed how they dispose of medicine and toxic materials, and 2 changed how they dispose of garbage or food waste. 63% (33 respondents) selected one or more of the options in survey question 3 that identified their having found the educational materials useful at some level. 22 reported that it helped them feel more confident they could recognize signs of septic failure, 18 that it increased their awareness of risks. 18 also reported that the materials gave them new information and 16 reported having new resources for further information.		N	Some changes reported in behavior change, but no before and after results presented. They did, however, have a control group but the report doesn't talk much about comparing the two and the control group was only provided to be able to compare those that were given a probability of failure versus those that were not offer a probability.	N		
Young, T. 2012. Scoop the Poop: Conducting a Pet Waste Outreach Campaign. Presented at the 2012 Land Grant and Sea Grant National Water Conference, U.S. Department of Agriculture and Sea Grant, May 23, 2012, Portland, Oregon.	Young 2012.pdf	Pet waste pick up	N/A	Multiple, please list	Change in awareness, perception or attitude; Change in rate of actual target behavior	N/A	The approach that was developed consisted of the following: a partnership with two humane societies which provided pet waste bag dispensers, educational material, and a survey to those adopting a dog, brochures placed at veterinarian offices, a public service announcement for radio and television, and dog biscuit give-a-ways for festivals. Data gathered from the surveys indicated that 37% of respondents knew that pet waste was a source of water pollution prior to receiving the educational information. Relative to the 400 respondents of a telephone survey instrumented in the region in 2009, this is low. The telephone survey found that slightly more than 68% of respondents 'strongly agreed' or 'agreed' that pet waste is a source of local water pollution. The campaign reflected positive behavior change with more people picking up pet waste after receiving the dispenser and educational information. This presentation will share the methods and steps towards implementing this campaign, results, and lessons learned.		N	Some positive behavior change reported.	N		

Citation Summary Count	
Multiple program citations	19
Car washing citations	2
Fertilizer reduction citations	11
Grass/leaf maintenance citations	2
Marina pumpout	2
Pet waste pick up citations	12
Septic system maintenance citations	9
Total	57

Count of programs with some kind of water quality measurement	8