



**CITY OF CHICO STORM WATER MANAGEMENT
PUBLIC EDUCATION AND OUTREACH PROGRAM
2009 – 2010**

Report Prepared by Jennifer Oman-Payne, Oman Communications, and Dr. Diane Schmidt, Professor at California State University Chico, June 29, 2010

Introduction/Project Summary

The following report is documentation of the City of Chico's Storm Water Management Education and Outreach Program (SWM EOP) from October 2009 – June 2010. The 2009-2010 City of Chico's SWM EOP has built upon the work of the Chico Urban Streams Alliance, *Clean Creeks Project*, Education and Outreach Program (Chico USA EOP) 2005-2007. The Chico USA EOP was funded under a CalFed grant and developed through the initial cooperative efforts of the following organizations: City of Chico, Butte Environmental Council, Big Chico Creek Watershed Alliance, and Kennedy/Jenks Consultants. The *Clean Creeks Project* addressed urban runoff pollution issues in the area of Chico, California through conducting a public awareness multi-media campaign and one-on-one outreach to potentially polluting businesses.

Jennifer Oman-Payne, of Oman Communications, served as Consultant to the City as the Program Coordinator of the SWM EOP according to the City of Chico's Storm Water Management Plan. The appropriate City of Chico staff approved all activities and materials produced. The City of Chico SWM EOP has extended the impact of this program from the previous year under direction of Oman Communications, while adding creative and relevant methods for outreach, collaboration and public involvement. The success of the program has been demonstrated by a raised awareness in the community and an increased participation of individuals, businesses and organizations in the local area. (see Survey Results).

Oman Communications, dedicated to increasing levels of awareness and behaviors achieved through prior work on this project, has extended the goals and objectives to encompass more members of the public, students in school classrooms, and businesses that can help prevent cigarette litter of waterways. The program has grown this year to involve more schools and clubs to help raise awareness of methods to prevent runoff pollution by implementing BMPs at fundraiser carwashes; and to provide outreach to local businesses through the dissemination of cigarette butt litter prevention educational materials and give-aways.

The 2009-2010 SWM EOP has met the following goals:

- Goal #1: Enhance community appreciation and stewardship of Chico's local waterways through education of the general public on best management practices (BMPs), focusing on Eco-friendly car wash BMPs and anti-cigarette butt litter outreach.
 - Goal #2: Engage and educate the public on behaviors that will help reduce and prevent storm water runoff pollution through third-grade classroom instruction, posting of information on a website, and involving college/university students in booth outreach to the general public at various events.
 - Goal #3: Encourage the public to adopt behavioral changes, such as those who smoke to dispose of butts properly, to help reduce and/or prevent storm water runoff pollution through a media blast campaign involving print and broadcast ads/PSAs, booth outreach, website, calendar, classroom instruction, flyers, posters, brochures, free pocket ashtrays, and Clean Water Business Partner-Cal Water inserts.
 - Goal #4: Encourage members of the public to participate in water quality related volunteer opportunities through the distribution of BCCWA Citizen Monitoring dates and Creek and Park Clean up dates in the widely distributed 2010 Clean Creeks Calendar; through the involvement of Butte College MESA Students and Chico State University Sustainability Interns in Eco-friendly car wash fundraiser outreach; through outreach to the public at public events; and through posting community website links and
-

Report of Activities

Public Presentations/Community Events

Booth Outreach

The Storm Water Management Education and Outreach Program (SWM EOP) Coordinator, Jennifer Oman-Payne provided program outreach at the following public events in 2010:

- 1) Soroptimist Home, Garden, Antique and Car Show – March 20-21, 2010
- 2) Endangered Species Faire – May 1, 2010
- 3) Footprint Festival, Chico State University – May 1, 2010
- 4) Thursday Night Market – May 13, 2010
- 5) Silver Dollar Fair – May 27th through 31st, 2010

Runoff pollution prevention educational materials such as the Chico Clean Creeks 2010 Calendar, Keep Chico Clean Postcards, and SWM EOP brochures for the general public, Landscape Contractors, Carpet Cleaners, and Pressure Washers were disseminated at the public events listed above. One-on-one outreach to booth passersby included information on Best Management Practices (BMPs) for prevention of runoff pollution. All print materials included the City Storm Water Logo.

The booths also included an urban watershed “Fishing Game” for young and old to catch a fresh water wooden fish and answer a question regarding BMPs for prevention of run-off pollution to win a prize.

Data was collected from the public through use of a survey questionnaire, which could be completed at the booth. The 2010 survey questionnaire had 8 questions. Give-aways, including environmentally friendly merchandise, were used as inducements to take the survey.

The SWM EOP booth at the annual Home & Garden Show, March 20, 2010. Passersby take water quality public knowledge surveys, play educational games and receive environmentally-friendly give-aways.



Public Involvement

During the 2009-2010 SWM EOP increased public outreach and involvement was achieved. Volunteers participated in the education and outreach activities.

California State University at Chico (CSU Chico) students, Butte College students, and representatives from local environmental education non-profit groups assisted with public education and outreach at the booths for the five public outreach events (Home & Garden Show, Endangered Species Fair, Footprint Festival, Thursday Night Market, and Silver Dollar Fair 2010)

CSU Chico students, Chico Unified School District (CSUD) parents and staff, and Butte College students worked as volunteers for the Fall 2009 and Spring 2010 *Clean Creeks in the Classroom* program. The following CSU Chico Departments provided extra credit for students who chose to volunteer: Chico State Recreation and Parks Department (Jon Hooper, Professor), and Chico State Health and Community Services Department (Mary Portis, Professor). The following individuals from community organizations and agencies provided educational field day stations for the *Clean Creeks in the Classroom/ Kids & Creeks* program: Department of Fish and Game (Anna Kastner), Chico State Biology Department (Joe Slusark), and Mechoopda Tribe (Ali Knight).

Approximately thirty-five parent volunteers joined the *Clean Creeks in the Classroom/ Kids & Creeks* field days and assisted with student supervision and logistics while serving as environmental steward role models. (Kids & Creeks is the sub-contracted organization that fulfills the field day component of the classroom instruction.) The approximate total number of volunteers for the Classroom Instruction portion of the SWM EOP was fifty.

Olivia Filbrandt, Senior at Chico High School and President of the ASB Club partnered with the SWM EOP to provide Eco-friendly car wash fundraiser training. She gave an interview on public radio and to the local daily newspaper, to raise awareness of the potential car wash fundraiser pollution issue. (Radio interview posted online at www.keepchicoclean.org.) (See Appendix C – newspaper article).

Collaboration/Contributions

1. CUSD Transportation Department and/or parent volunteers were responsible for transporting participating *Clean Creeks in the Classroom (CCC)* CSUD students to and from their field day destinations on time and safely.

2. A group of Butte College (BC) Math Engineering Science Achievement (MESA) students participated in a Car Wash Kit Competition in April 2010. This challenge to produce a model of an affordable, efficient and safe car wash kit for use by community charity car wash groups for the prevention of runoff pollution of waterways resulted in student-to-student outreach. BC MESA students assisted with education and outreach to Chico High School car wash groups and the Boys and Girls Club. They provided helpful educational materials for car wash charity groups, which are posted online, along with the TV news report, at www.keepchicoclean.org. These students donated the winning car wash kit to the Boys & Girls Club, for their Eco-friendly car wash fundraisers.



Three BC MESA student teams participated in the competition. Pictured on the right (clockwise) are the winning team members, E3: Juan Delgado, Victor Trujillo, and Leon Grant. Pictured on the left (clockwise) are the judges who served on the panel: Tom Blixt, Administrative Analyst and Senior Certified Stormwater Inspector Department of Public Works, Butte County; Terisita Curiel, Director of the Pre-college MESA Program, CSU Chico; Matt Thompson, Senior Civil Engineer, Sanitary Sewer & Storm Drain Division, City of Chico; Steve Fehrer, Executive Director, Sustainable Community Development Institute. April 2, 2010

Do you know where water ends up after you wash your car?

Water ends up in our rivers, creeks and our ocean. As it makes it's way to our water sources it carries a large amount of unsafe and harmful chemicals.



Harmful chemicals have lead to significant damage to our ecosystem and will continue to do so if we continue being socially irresponsible with our environment.



Earth Environmental Engineering has the solution for fundraising organizations to continue raising money and being socially responsible when conducting a car wash . The E2010 Eco-Friendly car wash kit is portable, fun and easy to use.

It is highly encouraged and recommended that only lead free water hoses and biodegradable soaps be used when conducting a car wash.

The E2010 Eco-Friendly car wash kit consists of three major components which are lead free. The first component consists of a sophisticated barrier that will collect water and keep it from ending up in storm drains. The second component is a 12 gallon 5 horse power shop vacuum that will suck all the water collected by barrier. Third component is a submersible water pump inside the shop vacuum that will disperse the soapy water into a pervious area .

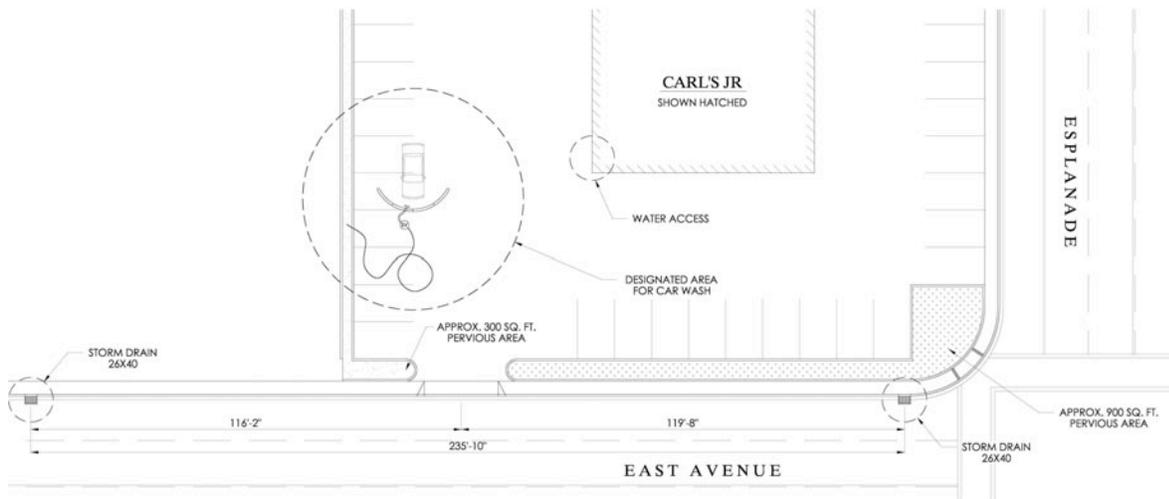
1.



2.



3.



Materials developed by E3 Student Team. Sample site map for charity car wash groups to use to determine optimal location for a car wash kit set-up.

3. The City of Chico SWM EOP linked to the Big Chico Creek Watershed Alliance Citizen Monitoring Program through a dedicated web page on the City's program website www.keepchicoclean.org and through dissemination of the 2010 Clean Creeks Calendar, which listed all Citizen Monitoring dates for public information and greater participation in 2009-2010.

4. The general public, teachers and students were invited to participate in the 2010 Chico Clean Creeks Calendar project by contributing their amateur photographs of Chico urban creek scenes. The photos that were donated for the educational calendar were high quality and helped to inspire public stewardship of local waterways.

5. Clean Water Business Partner, Andy Willhoit, owner of Home Prep, worked in collaboration with Oman Communications to produce the 2010 Chico Clean Creeks Calendar. Willhoit contributed salient educational content on BMPs and resource links for public referral. He oversaw the calendar production and served as a public spokesperson for the runoff pollution prevention message of the calendar. He provided outreach to Chico High School students, who have contributed photos for the 2011 calendar.

6. The Chico Center of the Boy's & Girl's Club has committed to using the Eco-friendly car wash kit that was donated to them by the Butte College MESA students through the City's SWM EOP. B&G Club staff members are educated on car wash BMPs and they are enthusiastic to employ these water quality protection measures at all of their future car wash fundraisers.



7. California State University Sustainability Interns invited the SWM EOP Coordinator, Jennifer Oman-Payne to present to their group on Runoff pollution prevention and car wash fundraiser BMPs. As a result their group has worked to include the information in their soon-to-be-released Green Event Guide. (To be disseminated in Fall 2010.)

8. Chico High School charity car wash groups received training on how to conduct Eco-friendly car wash fundraiser events. The Snowboard & Ski Team borrowed the City's car wash kit and conducted the first Eco-friendly car wash fundraiser at Chico High School in May 2010.



Media Campaigns

A multimedia outreach campaign was conducted and outreach materials/media included public education and outreach messages such as but not limited to:

- *Remember, only rain down the storm drain*
- *What's in your gutter is in your Creek*
- *Water that flows into the gutter drains directly to our creeks*
- *Never fertilize or apply pesticides when rain is predicted*
- *Clean up after pets*
- *Never dump anything down a storm drain or gutter*
- *Wash cars at car wash or on lawn rather than in driveway*
- *Dispose of cigarette butts in pocket ashtrays or trash receptacles—never toss onto the ground.*
- *Eco-friendly car washes prevent soap, chemicals and trash from being washed into storm drains.*

Building upon the results of the 2009 follow-up citywide public knowledge survey,

existing outreach materials and media were adapted and new materials were developed. The 2010 messages were broadcast through nine different media channels.

Posters and educational display units with pocket ashtrays for proper cigarette butt disposal were posted throughout the City of Chico. The message was well received and local business owners were willing to house the display units and pocket ashtrays. All 500 of the pocket ashtrays were given away to the public. These six display units were placed strategically at six locations, bars and coffee shops (LaSalles Bar, Duffy's Pub, Riley's Bar, Panama Bar & Grill, Has Beans Coffee Shop, and the Naked Lounge Coffee Shop) during the three weeks time in May 2010 that the "Keep Your Butt Out of the Gutter" ads and PSAs were printed in local weekly newspapers.

Regarding public response to the media campaign, the 2010 survey results show:

...the data suggest that the 2010 EOP outreach activities have generally reached an increased percentage of respondents than in 2009. ...The greatest exposure seems to come from television, storm drain markers, and booths at public events as outreach sources... 51-54 percent of the respondents identified having seen or heard messages from television. Further, the data results also show 19 to 25 percent of the respondents identified seeing or hearing messages from the radio, 15-20 percent from daily newspapers, 6-12 percent from monthly newspapers, and 19-24 percent from posters. Schmidt, Diane E. PhD., Political Science, California State University Chico (Schmidt, 2010 Convenience Survey Report)

Newspaper advertisements with a focus on car wash BMPs and proper cigarette butt disposal were developed. The ad contained a general storm water quality message, the program website url and contact information. The car wash ad was placed in the *Chico News & Review* the week of May 15th, and for three weeks in the *Synthesis*, a weekly newspaper, April 19th- May 2nd 2010. In addition a press release was printed in the *Synthesis* to coincide with the ad placement. The public message focused on anti-cigarette butt litter and included general information on BMPs for prevention of runoff pollution of local waterways.



Water that drains into the gutter flows directly into the creek!

Many animals make their homes in Chico's creeks. Car wash fundraisers can cause pollution of creeks and streams.

If you are planning to host a car wash fundraiser, please contact the City of Chico for information on how to conduct an environmentally friendly event.

Remember, only rain down the storm drains.

Phone: City of Chico, 879-6950

Visit: www.keepchicoclean.org



(see Appendix C Newspaper Ads and Public Service Announcements)

The Contractor used three City supplied TV Public Service Announcements (PSAs) developed under the Chico USA EOP, and modified under a previous contract. Oman Communications coordinated more than 186 thirty-second broadcasts on the Fox 20 TV network during the period 05/01 to 06/20/10. The PSAs contain educational information on the use of BMPs to protect water quality. Broadcasts totaled in excess of 65 English language prime time “spots”, 65 non-prime time English language “spots”, 28 Spanish language “spots”, and 28 non-prime time Spanish language “spots”.

The Contractor used the City supplied radio PSA developed under the Chico USA EOP and modified under a previous contract. The English and Spanish versions of the 60-second PSA contain educational information on the use of BMPs to protect water quality. The Contractor coordinated a total of 340 radio spots that were broadcast on KMIX, KHSL, and KHHZ from 04/30 to 06/30/10, with a concentrated broadcast from 4/30 to 05/09. The English version of the PSA was played no less than 15 times daily over a continuous two-week period. During the same two-week period the Spanish Language version was played a minimum of 12 times.

PSAs were approved prior to being broadcast. All ancillary materials were approved prior to being printed. All printed materials contained the City SWM EOP logo.

3,000 Chico Clean Creek 2010 Calendars were printed and distributed to the general public. See Outreach section for details.

2010 Chico Clean Creeks™

Keep Chico Creeks Clean
Hire a Clean Water Business Partner

For a current directory of Clean Water Business Partners, visit www.keepchicoclean.org

CARPET CLEANERS
Chico Carpet Cleaning 891-3636

Cleanrite Buildrite 891-0333
www.cleanrite-buildrite.com

Clean King by DeHart 345-9907

Dean's Upholstery and Carpet Care 345-0832

Lincoln Cleaning & Restoration 895-0646
www.lincolncleaning.com

ServiceMaster Select 342-7976
www.servicemastersselect.com

SJS Carpet Cleaning 898-0101

Sunrise Carpet Cleaners 891-4113
www.sunrisecarpet.biz

EQUIPMENT SUPPLIERS
Industrial Equipment 893-2125
<http://www.industrial-equipment.biz>

GENERAL CONTRACTORS
Home Prep 897-0274
Andy Willhoit, Contractor #756653
www.ChicoRemodel.com or www.HomePrep.net

LANDSCAPE CONTRACTORS
Dugan's Landscape 893-4548 or 624-7663

East Meets West Landscaping & Gardening 345-6304

Ewing Irrigation 894-5900
www.ewingI.com

Gaia Creations Ecological Landscaping 321-9715
www.gaiacreationsecoland.com

Greenscape 588-4794
www.greenscapecare.com

KCL Custom Landscapes 896-1211

Lawns-R-Us 893-4450

Lifescapes 894-5433
www.lifescapes.us

Performance Design & Landscape 879-0999

Sierra Landscape & Maintenance Inc. 895-0263
www.sierralandscapeinc.com

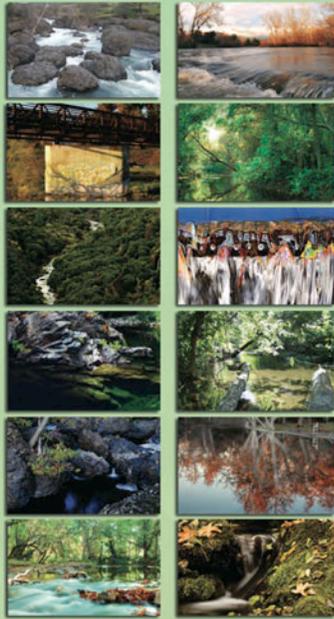
NURSERIES
Floral Native Nursery 892-2511
<http://www.floralnativenursery.com>

Geffray's Gardens 345-2849

Spring Fever Nursery & Gardens 534-1556

VEHICLE MAINTENANCE CONTRACTORS
Russ' Auto Detailing/Windshield Repair
Free pick-up & Delivery 898-9524

Calendar



RESOURCES

ALTERNATIVE CLEANING & GARDENING INFORMATION
www.safespray.com – Spray bottles imprinted with homemade cleaning & gardening recipes (Chico-based company)

www.ecocycle.org/hazwaste/recipes.cfm

www.ecologycenter.org/factsheets/cleaning.html

www.OurWaterOurWorld.org

WASTE DISPOSAL, REUSE & RECYCLING
Household Hazardous Waste Facility, 1101 Marauder St., Chico, Call 1-866-HAZCAT.
<http://www.buttecounty.net/RecycleButte.aspx> (Paint, solvents, garden/cleaning products, automotive fluids, mercury and E-waste products)

North Valley Organic Recycling, Cohasset Rd., Chico 624-3529 (unpainted/untreated lumber, plant, shrub, and tree trimmings, grass clippings and leaves). Open Tues – Sat 8-4pm.

Butte County Landfill 538-7681

Habitat for Humanity of Chico (The Re-Store), 220 Meyers Street, Chico 895-1271

www.FreeCycle.org

www.RecycleButte.net

Project S.A.V.E. - accepts and redistributes unused medical products and equipment to hospitals and clinics in need around the world. www.chicoprojectsave.org

WATERSHED EDUCATION
Butte Environmental Council 891-6424 www.becnet.org
Big Chico Creek Watershed Alliance www.BigChicoCreek.org

CREEK WATCH HOTLINE
Call 891-6459 to report illicit dumping into the city's storm drains or creeks.
Hot line hosted by the Butte Environmental Council and funded by the City of Chico

CITY OF CHICO'S SANITARY SEWER & STORM DRAIN DEPARTMENT
To report storm drain backups or missing manhole and storm drain grates, please call 894-4200 immediately. For sewer or storm drain emergencies after 3:30 pm, on weekends, or on holidays call 897-6911.

CITY OF CHICO WATER POLLUTION CONTROL PLANT
4827 River Road 894-4300

BUTTE COUNTY
Butte County Public Works Department, Stormwater Program 538-7266 ext. 209

Butte County Water Resource Conservation – www.buttecounty.net/waterandresource

Butte County Public Works Department, Solid Waste and Recycling Division 538-7681, www.buttecounty.net/Public Works/Divisions/Solid Waste.aspx

VOLUNTEERS OPPORTUNITIES
Annual Parks & Creeks Clean-up Day – September 25th 2010
Join the annual city-wide effort to remove trash from our local waterways before the rainy season. For more information contact Butte Environmental Council at 891-6424 or visit www.becnet.org

Bidwell Park Volunteer Program
For volunteer information contact Lise Smith-Peters, City of Chico Volunteer Coordinator, at 896-7831 or lpeters@cityofchico.us

Big Chico Creek Watershed Alliance - If you would like to join the Big Chico Creek Stream Team or school-based Youth Stream Team please contact :
Timmarie Hamill at thamill@bigchicocreek.org or 342-6620

Friends of Bidwell Park – www.friendsofbidwellpark.org

This calendar is funded by the City of Chico. The content is a collaborative effort between the City of Chico's Storm Water Management Program, the City of Chico's Wastewater Treatment Plant, Jennifer Oman Communications, StormwaterOutreach.com, and Clean Water Business Partner - Andy Willhoit (HOME-PREP). Design by Patrick C. Maxwell (AKUM Studios). BMP icons designed and copyrighted by StormwaterOutreach.com 2009



Storm Water Classroom Presentations

The SWM EOP Classroom Outreach component of the program, *Clean Creeks in the Classroom* (CCC) served third-grade classrooms in the area and consisted of two one-hour presentations to each classroom on two different class days, and one four-hour field day per classroom. Lessons and activities meet select California State Third-Grade Education. Lessons included:

- Activities that promoted watershed awareness and hands-on experience.
- Learning objectives that were easily translated into runoff pollution prevention behaviors.
- Classroom instruction that was linked to existing resource management efforts to enhance opportunities for youth to apply what they are learning and participate in on-going community events.
- Instructions that encouraged collaboration and informed stewardship.
- Opportunities for students to interact directly with their peers in an outdoor setting where knowledge gained in the classroom could be implemented through hands-on activities.

The Clean Creeks in the Classroom curriculum may be viewed in Appendix B.

Letters introducing the curriculum to parents of students in the classrooms served were translated to Spanish. English and Spanish versions were provided to classroom teachers.

A total of eighteen third-grade classrooms participated in the CCC Program:

Seven third-grade classes were served in the fall 2009

- two classes at Parkview Elementary School
- three classes at Chico Country Day School
- two classes at Emma Wilson Elementary School

Eleven classes were served in the spring 2010

- two classes at Rosedale School
- three classes at Chapman School
- two classes at Little Chico Creek Elementary School
- two class at Citrus Elementary School
- two classes at Emma Wilson Elementary School

An approximate total of 515 third-grade students were served for a total of 72 hours of CCC classroom instruction during the 09-10 school year. The field trip portion of the 09-10 program consisted of 10 field trips, with two classrooms attending each field trip, to Five Mile Recreation area. *Kids & Creeks* staff, student and parent volunteers implemented classroom visits and field days. Program Coordinator, Jennifer Oman-Payne, and Kids & Creeks Coordinator, Jeremy Miller, trained the staff and volunteers, and provided classroom/field day instruction. The staff included two credentialed teachers.



Clean Creeks in the Classroom 3rd Grade students and Fish & Game Biologists search for aquatic insects to determine the health of Big Chico Creek. 5-Mile Recreation area, Spring 2010.



Clean Creeks in the Classroom 3rd Grade students individualize their "No Dumping, Drains to Creek" t-shirts with their favorite water quality messages and creek wildlife. Fall 2009.

Clean Water Business Partnership Program

Since 2006, when the Chico USA EOP initiated the Clean Water Business Partnership Program (CWBP) the program has grown from eight to twenty-seven Clean Water Business Partners. During the 2009- 2010 year, the program grew with the addition of two new partners, and has partnered with one Pressure Washer after the development of a Pressure Washer brochure, and CWBP survey and pledge forms, specific to surface cleaning BMPs. (see Appendix D).

The City of Chico CWBP Program was invited to participate in a seminar on 06/04/10 for local businesses that use pressure washing and wastewater capture/filter systems, which was hosted by CWBP Industrial Equipment. This event resulted in contacts for potential new CWBPs and a growing partnership to reach these types of businesses.



Industrial Equipment staff demonstrates “Green” pressure washing equipment to City of Chico CWBP team and potential CWBPs on 06/04/10 at Industrial Equipment Facility, 830 Cherry Street, Chico.

Oman Communications maintained the current City of Chico Clean Water business Partnership (CWBP) Program by providing brochures for educational outreach to partners’ customers; the 2010 CWBP logo; and 2010 Chico Clean Creeks Calendars to new CWBP’s. Free advertising was provided to 2010 CWBPs on the CalWater insert, the calendar, and the storm water web site www.keepchicoclean.org.

A California Water Service Company (Cal Water) insert promoting the CWBP Program was mailed to customers during the March 2010 billing cycle. The insert included a call to action to the public to help protect local water quality by patronizing CWBPs, a general clean water message, and the website url and telephone contact information. Approximately twenty-seven thousand inserts were mailed. The Contractor coordinated the mailing with California Water Service. Content was approved by the City of Chico prior to printing (see Appendix D).

Local businesses participating in the program are:

Carpet Cleaners

Carpet Restoration
Chico Carpet Cleaning
Clean King by DeHart
Cleanrite Buildrite
Dean's Upholstery & Carpet Care
Lincoln Cleaning & Restoration
Service Master Select
SJS Carpet Cleaning
Sunrise Carpet Cleaners

Landscape Contractors

Dugan's Landscape
East Meets West Landscaping
Ewing Irrigation
Gaia Creations Ecological Landscaping
Greenscape
KCL Custom Landscapes
Lawns-R-Us
Lifescapes
Performance Design & Landscape
Sierra Landscape & Maintenance Inc.

Nurseries

Floral Native Nursery
Geffray's Gardens
Native Springs Nursery
Spring Fever Nursery & Gardens

General Contractors

Home Prep

Pressure Washer Contractors

Olli's Pressure Washing

Vehicle Maintenance Contractors

Russ' Auto Detailing

Equipment Suppliers

Industrial Equipment

Recruitment of new Clean Water Business Partners involved calling potential CWBP's to query and invite them to participate in program. Surveys and pledges were reviewed with potential new partners. Contacts and data were tracked. Onsite visitations and phone interviews were performed to discuss and answer questions regarding the CWBP program.

Chico Unified School District applied to become a Clean Water Business Partner on June 24th 2010, in the categories of Pressure Washing, Landscaping, and General Business. The completed surveys and pledge forms are in the review process.

Outreach

Outreach included (see samples in Appendices A and C):

TV Commercials – Three runoff pollution prevention 30-second commercials: One addresses related landscaping pollution causes, such as fertilizers and pesticides. The other addresses auto fluids, and the third address general pollutants, such as litter, pet waste, car washing (soap, etc.). The commercials are broadcast in Spanish and English.

Radio Commercial – One radio 60-second commercial that addresses general pollutants, such as litter, cigarette butts, pet waste, car washing (soap, etc.). It is broadcast in Spanish and English.

Daily/weekly newspaper ads – 1. In past years the ad with the general runoff pollution prevention message has been printed (with image of car wash wastewater draining into the gutter). 2. In 2010 a new ad that specifically targeted the cigarette butt issue was printed. The ad reads: “Keep your butt out of the gutter.” Both ads were printed in 2010 for a total of 4 weeks. The ads also include general messages, “Water that flows into the gutters drains directly to the creeks;” and “Remember, only rain down the storm drain.”

Daily/weekly newspaper articles – Press coverage is generated to encompass articles that cover various topics (e.g. calendar project – which includes the general messages such as, “Water that flows into the gutters drains directly to the creeks” and “If it isn’t rainwater, it doesn’t belong in the gutter.”)

Posters – 5 posters – Three of the posters contain the general messages with image of car wash wastewater draining into the gutter, image of oil spill on 1-Mile Big Chico Creek swimming area, and image of landscaping tools and toad in the back of work truck. Two of the posters targets the cigarette butte issue and reads, “Keep your butt out of the gutter,” and “Water that flows into the gutters drains directly to the creeks.” The sixth poster, developed under the 08-09 contract, targets the car wash issue.

Murals – One mural is remaining in downtown Chico. It conveys the general message, “Thank you for keeping Chico’s clean! Water in the gutters drains directly to the creeks.”

Booth at a public event – All outreach messages are conveyed at the booth, with the main message, “Water that flows into the gutters drains directly to the creeks.”

Information for Third-Grade Classroom Outreach - All messages are conveyed in the classroom presentations, with the main message of, “Water that flows into the gutters drains directly to the creeks.” The students receive calendars and detailed information regarding potential pollutants, litter, cigarette butts, pet waste, car washing (soap, etc.), fertilizers and pesticides.

Chico Clean Creeks Calendar – The outreach information is comprehensive and includes inspirational images of beautiful local urban creek scenes. Creek Watch

Hotline information is listed in the calendar. The calendar refers readers to additional information sources for those who choose to educate themselves further. It also provides information on all of the City storm water management programs, such as the Clean Water Business Partnership Program and the Clean Creeks in the Classroom Program.

Internet website www.keepchicoclean.org - The website was re-designed and upgraded to include interactive and engaging elements during 09-10, such as Clean Creeks Calendar photos as screen savers and links to kid's watershed awareness games. www.keepchicoclean.org houses images documenting all of the outreach programs, and provides outreach materials downloads, Eco-friendly car wash fundraisers tips, TV and radio commercials in Quick Time files, Clean Water Business Partnership Program surveys and pledges, Creek Watch Hotline information for reporting illegal dumping, and links to the Butte County Storm Water Management Program online. The website includes links to other sites that provide additional information for those who choose to get involved and educate themselves further, such as the link to the Big Chico Creek Watershed Alliance Citizen Monitoring Program and the UC Davis Integrated Pest Management website.

Storm Drain Markers – The markers convey the simple message, “No Dumping – Drains to Creek.” Program logos and outreach messages integrate the marker for message emphasis, and to facilitate the connection of the educational message to the physical location of the storm drains.

Press Coverage - Three newspaper articles were printed in the daily Enterprise Record: “Creeks calendar available for free,” January 8, 2010; “Fundraisers choose cleaner car washes,” April 4, 2010; “To Help at Car Washes,” Community Snapshots, May 31, 2010. Two radio interviews were given and broadcast on KCHO Public Radio: Clean Creeks Calendar release 01/29/10 and Eco-friendly car wash fundraiser outreach 04/02/10. Two TV Interviews were broadcast on KNVN local news: “Clean Creeks Calendar release,” 01/08/10 and “Car Wash Kit Donation to Boys & Girls Club,” 05/21/10. (see Appendix C for press releases and newspaper clippings; see www.keepchicoclean.org or enclosed disc for Radio and TV coverage audio and video files.)

Video – 6-minute informational video on how to conduct an Eco-friendly car-wash fundraiser event. The City's car wash kit is featured and viewers are encouraged to develop their own car wash kits. The Butte College MESA students' efforts are highlighted as a model for other groups who want to build their own runoff pollution prevention car wash kit. The video will be available at www.keepchicoclean.org. (See appendix A)

Community Outreach Activities:

1. Downtown Chico bars and coffee shops were targeted with promotional material on cigarette butt litter prevention. 500 pocket ashtrays were made available, and distributed to the public in display units that conveyed educational messages, at potentially high-impact bars and coffee shops, such as LaSalles Bar, Duffy's Pub, Panama Bar & Grill, Riley's Bar, Has Beans Coffee Shop and the Naked Lounge Coffee Shop. One-on-one outreach was provided to business owners and managers. The dissemination of the pocket ashtrays was announced in the runoff pollution prevention PSA, which appeared in the weekly *Synthesis* newspaper for four weeks, and coincided with an anti-cigarette butt litter ad that was printed for three weeks, during late April and early May 2010 .

2. Schools were targeted to raise awareness and provide solutions for potential runoff pollution resulting from car wash fundraisers. Presentations were provided to the Associated Student Body (ASB) Club Officers and Advisors at Chico High School on 12/09/09 and Pleasant Valley High School on 03/02/10. The Chico High School ASB Club President adopted the car wash fundraiser runoff pollution prevention cause and partnered with the SWM EOP to conduct a training for Eco-friendly car wash fundraisers at Chico High School on 04/01/10. As a result, the Chico High School Snowboard and Ski checked out the City's car wash kit and conducted the first Eco-friendly car wash fundraiser at the school site on 04/17/10. The Program Coordinator, Jennifer Oman-Payne, provided field assistance for groups to set-up environmentally friendly car wash sites on 04/17 and 05/21/10.



Chico High School, Snowboard & Ski Team Eco-friendly car wash fundraiser, 04/17/10. City car wash kit is capturing wastewater and diverting it to the adjacent lawn area.



3. Outreach was also provided to the Butte College MESA students, who also adopted the car wash fundraiser pollution prevention issue. These students created model car wash kits for runoff pollution prevention at car wash fundraisers. They donated one of their kits to the Chico Boy's & Girl's Club on 05/21/10.

Butte College MESA students, and MESA Director, Nena Anguiano, provide demonstration of donated car wash kit to the Chico Boys & Girls Club on 05/21/10.



4. Hands-on educational runoff pollution prevention activities were provided at the CUSD Chico Science Fair on March 23, 2010. Jennifer Oman-Payne, Program Coordinator, coordinated with Kids & Creeks staff to provide Enviroscape model interactive runoff pollution prevention demonstrations to school groups attending the fair, reaching an additional 120+ CUSD students.



Chico Science fair students participate in Enviroscape interactive demonstration. Students learn about BMPs for the prevention of runoff pollution of waterways.

5. A 20-minute PowerPoint presentation was given at the Butte County Water and Resource Conservation Department Watershed Urban Workshop on 12/10/09. The focus of the presentation was the Storm Water Education Program. Butte College faculty and students contributed to the presentation, specifically focusing on the benefits of pervious concrete and biofiltration.

Calendar and Brochure/Post Card/ Poster Dissemination



Calendars

3,000 Calendars were printed in 2010, which was an increase from 2,500 in 2009. The additional 500 copies were printed in collaboration with the Wastewater Treatment Plant. In addition to Storm Water Management educational messages, BMPs that addressed proper disposal of Fats, Oils & Grease, and Pharmaceutical Waste were included. (see Appendix A)

3,000 copies were distributed as follows:

- Home & Garden Show - 500
- Butte County Library - 700
- CARD - 300
- City of Chico employees - 500
- City of Chico Park Department volunteers - 25
- City of Chico Wastewater Treatment Plant staff -150
- Chico Unified School District Administration/Maintenance & Operations - 5
- Private Industry Council (PIC) of Butte County - 10
- Clean Creeks in the Classroom staff and volunteers - 20
- Butte College students and instructors - 100
- Big Chico Creek Watershed Alliance volunteers - 50
- Local businesses for general public (e.g. US Bank) - 165
- 3rd graders/teachers participating in Clean Creeks in the Classroom Program - 350
- CWBPs -120
- Project documentation - 5

Post Cards

2000 postcards were printed and 1,500 have been disseminated. The remaining 500 will be distributed at local businesses and the Library throughout July and August 2010. (see Appendix A)

Library - 100

Silver Dollar Fair - 1,000

City of Chico, City Hall – 100

Students and teachers - 100

Local businesses - 200

Posters

The three original Chico USA posters were redesigned to include the new City logo, and a new “Keep Your Butt Out of the Gutter” poster was designed. A total of 200 posters were printed and 100 were displayed at the local businesses and venues listed below. The remaining 100 posters will be used for the 2010-11 SWM EOP. (see Appendix A)

Downtown Chico stores, shops, restaurants, bars.

2-3 blocks within the vicinity of 5th Street & Ivy Street.

Chico State University campus (including Landscape & Maintenance employee areas)

Various areas in the City of Chico limits (CWBP locations, etc.)

School Classrooms participating in the *Clean Creeks in the Classroom Program*

Pocket Ashtrays

A press release and an associated ad printed in the Synthesis weekly notified the public to watch for the pocket ashtrays at local bars and coffee shops in April and May 2010 (see Appendix C).

500 Pocket Ashtrays were disseminated in educational display units (see display unit label below) to the following Chico locations: (5 were kept for documentation purposes)



1. LaSalles Bar from 04/22 to 04/29/10 - 40 pocket ashtrays (Display was discarded.)
2. Duffy's Pub from 04/29 to 05/13/10 - 50 pocket ashtrays (Display was discarded.)
3. Riley's Bar from 04/29 to 05/20/10 – 100 pocket ashtrays (Display was damaged.)
4. Panama Bar & Grill 04/22 to 04/29/10– 25 pocket ashtrays (Display was discarded.)
5. Naked Lounge Coffee Shop 04/22 to 05/25– 120 pocket ashtrays (Display retrieved.)
6. Has Beans – 04/22 to 06/03/10 – 150 pocket ashtrays (Display disappeared.)
7. Silver Dollar Fair Educational booth 05/27 to 05/31/10 – 15 pocket ashtrays



Keep Chico Clean

Home Preventing Runoff Our Business Partners Outreach Get Involved Desktop Photos Media Reports About Us

All water in storm drains goes directly into streams without being treated



Missing Markers?

If you notice any missing storm drain markers, call the City of Chico at 879-6950 to report it and request a replacement.



Desktop Photos

Download three years of Keep Chico Clean calendar photos and use them as desktop photos for your computer.



Storm Water Education Booth at the Silver Dollar Fair
May 27-31, 2010

Photos Sought for 2011 Chico Clean Creeks Calendar

Photos of Chico's creeks and waterways are being sought for the third edition of the Chico Clean Creeks Calendar. The 2011 calendar will promote the protection and enjoyment of the creeks and encourage residents to prevent pollution. The calendars, paid for by a grant, are distributed free at various public events and through the city. Photographers will not be paid for their contributions but they will be credited for their work.

Send print-quality photos in the following size and format: 8.5x11 at 300 dpi resolution, as a JPEG file to chicocreeks@gmail.com.

Important Contacts

Creek Watch Hotline

Report water quality concerns

Storm Water Web Site www.keepchicoclean.org

A website was maintained on the existing City of Chico's Storm Water Management Education and Outreach Website. The web site was re-designed and is to the public on 06/30/10. All outreach materials, community resources, CWBP listing, and Creek Watch Hotline material will continue to be housed on the redesigned website. All postings to the web site were approved by the City prior to posting.

Creek Watch Hotline

The existing Creek Watch Hotline was maintained at Butte Environmental Council (BEC). The Hotline is a dedicated phone line and kept up to date with current phone numbers for individuals or department currently on the hotline. The number and information was listed on the web site. The public is urged to report dumping, or other types of pollution to the creek witnessed.

Creek Watch Hotline Calls

July 2009	7 calls
August 2009	5 calls
September 2009	5 calls
October 2009	3 calls
November 2009	7 calls
December 2009	2 calls
January 2010	5 calls
February 2010	5 calls
March 2010	5 calls
April 2010	5 calls
May 2010	8 calls
June 2010	2 calls (as of June 17 th)

CONVENIENCE SURVEY 2010 REPORT:
IMPACT OF STORMWATER MANAGEMENT
EDUCATION AND OUTREACH PROGRAMS

By
Dr. Diane E. Schmidt
For
Oman Communications
and
City of Chico, CA
June 24, 2010

EXECUTIVE SUMMARY

The City of Chico contracted for a brief convenience survey on water pollution to provide mechanism for monitoring the veracity of previous and continuing outreach activities. The 2008 survey had 14 questions and the 2009 survey had 8 questions. The 2009, was administered at three locations to receive feedback on program effectiveness: The annual *Home, Garden & Antique Show* (seven hours on March 21, 2009), Downtown Chico's *Thursday Night Market* event (four hours on May 15, 2008) and at the *Silver Dollar Fair* event (five and half days from May 22-26, 2008). The purpose of the convenience survey was to provide a snapshot of whether educational outreach messages administered in 2006 and continuing in 2009 are still continuing to promote the program goal. The program goal for educational outreach efforts was to promote best management practices (BMPs) for prevention of urban runoff pollution. The objectives included:

- Improving awareness of runoff pollution issues.
- Increasing knowledge about pollution prevention.
- Fostering behavior changes consistent with BMPs.
- Modifying or creating supportive attitudes for water quality protection.

The results of the survey indicate that the goal of the outreach program continues to be met and the objectives continue to be achieved. Exposure to past and present outreach activities is associated with knowledge and awareness of runoff issues and causes of creek pollution. In addition, knowledge of where runoff from yards, gutters, streets, and roads ends up is associated with exposure to educational outreach activities. Further, self-reported changes in handling of yard, household, and garden waste and materials is also associated with exposure to educational outreach activities. In particular, television commercials, booths at public events, and the storm drain markers are especially related to knowledge, awareness, and positive changes in respondent engagement in targeted best management practices. In sum, past and present educational outreach activities promoting best management practices for handling chemicals and waste from the household, yard, and garden have been highly effective in increasing awareness, knowledge, and use of these best practices.

INTRODUCTION

The City of Chico contracted in 2008 and 2009 for a brief convenience survey on water pollution to provide snapshot mechanism for monitoring the veracity of previous and continuing outreach activities. The 2008 survey had 14 questions and the 2009 survey had 8 questions. The 2008 survey was administered in two locations to receive feedback on program effectiveness: Chico's *Thursday Night Market* event (four hours on May 15, 2008) and at the *Silver Dollar Fair* event (five and half days from May 22-26, 2008). The 2009 survey was administered at three locations: The annual *Home, Garden & Antique Show* (seven hours on March 21, 2009), Chico's *Thursday Night Market* event (four hours on May 14, 2009) and at the *Silver Dollar Fair* event (five and half days from May 20-25, 2009). The 2010 survey was administered at four locations: The annual *Home, Garden & Antique Show* (two days from March 20-21, 2010), CSU Chico *Footprint Festival* (three hours on May 1, 2010), Chico's *Thursday Night Market* event (four hours on May 13, 2010) and at the *Silver Dollar Fair* event (five and a half days from May 27-31, 2010). The survey was offered to event attendees who passed by or stopped at the City of Chico *Storm Water Management Education and Outreach Program* (SWM EOP) booth staffed by

Jennifer Oman, SWM EOP Coordinator. Give-aways including environmentally-friendly merchandise and kids' prizes were used as inducements to take the survey.

BACKGROUND

The purpose of the convenience survey was to provide a snapshot of whether educational outreach messages administered in 2006 and continuing in fall 2008-spring 2010 are still continuing to promote the program goal. The program goal for the previous educational outreach efforts was to promote best management practices (BMPs) for prevention of urban runoff pollution. The objectives included:

- Improving awareness of runoff pollution issues.
- Increasing knowledge about pollution prevention.
- Fostering behavior changes consistent with BMPs.
- Modifying or creating supportive attitudes for water quality protection.

As part of the Chico Urban Streams Alliance (CUSA) two *Public Knowledge of Water Quality Surveys* (2005 and 2007) were administered to a cross-section of Chico residents and an *Education and Outreach Program 2006* (EOP) was designed to address urban run-off issues. Based on goals set by the coalition of Chico USA, the focus of the questions and the EOP were to address:

POLLUTION RUNOFF FROM

Fertilizers
Pesticides
Herbicides
Cleaners
Animal waste

IMPROPER BEHAVIOR SUCH AS

Discarded cigarettes
Dumping trash in creek
Motor oil not recycled
Green waste in creek
Applying pesticides before a rain

The EOP involved the following activities over the 2006-2010 time periods (see Appendix A for full descriptions):

- Chico Clean Creeks Calendars
- *Clean Creeks in the Classroom* program
- *Clean Water Business Partnership*
- *Eco-friendly car wash training*
- Radio and television advertising
- Posters and public murals
- Internet site postings
- Public events booths with give-aways.
- Storm drain marker.

While the murals, storm drain markers, posters, and brochures are displayed in public spaces throughout the year, and the website is available online at all times, Oman Communications plans and implements a concentrated period of outreach annually in the spring. The calendar dissemination is the "kick-off" to the outreach effort (January through March - culminating at the *Home & Garden Show*), followed by a "blast" of messages via the radio and TV commercial broadcasts in April and May; the booth outreach at the *Home & Garden Show*, *CSU Chico Footprint Festival*, *Thursday Night Market*, and the *Silver Dollar Fair*; *Clean Creeks in the Classroom* program implementation in 3rd Grade classrooms March-May (the program is also implemented in the fall); newspaper ads in May (2 newspapers are selected annually); TV, newspaper and radio press coverage on eco-friendly car wash trainings (in collaboration with schools and youth groups); and presentations to Butte College and CSU Chico student groups.

2010 CONVENIENCE SURVEY

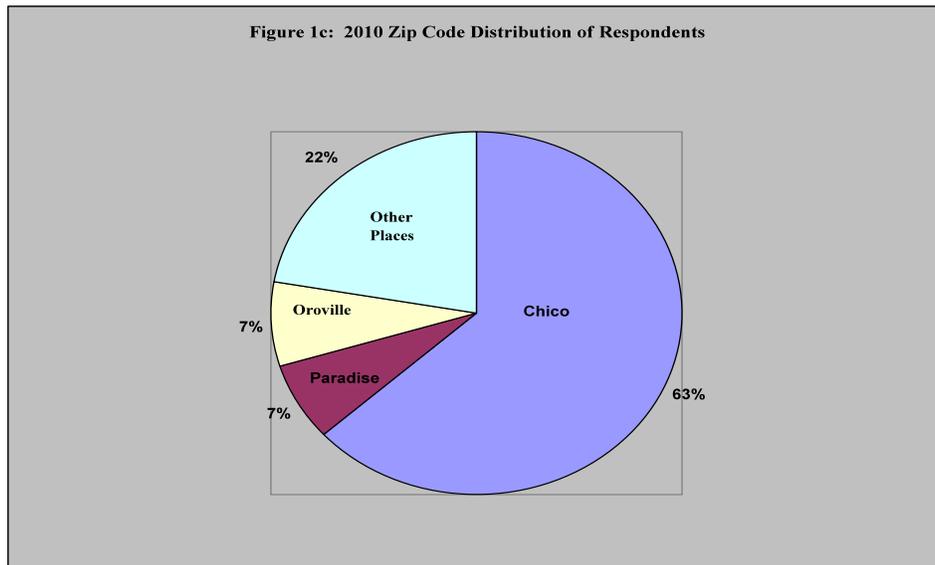
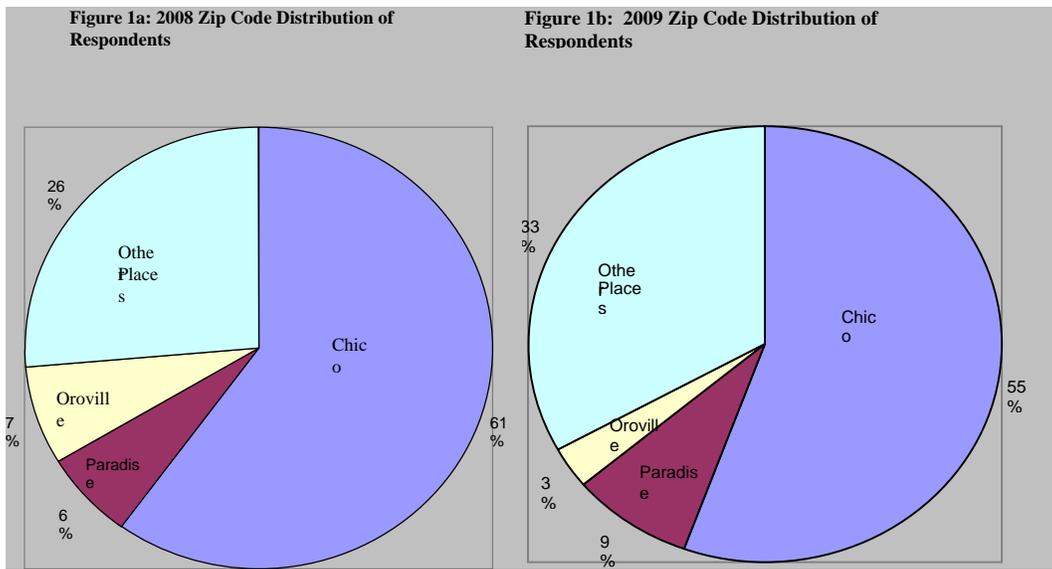
While the previous surveys in 2005 and 2007 were conducted on random samples of Chico residents by telephone interviews, the 2008, 2009, and 2010 surveys were conducted with event attendees using a paper survey. Just as in 2008 and 2009, the 2010 survey respondents were self-selected and filled out the survey in the presence of Ms. Oman or SWM EOP assistants and student interns. Each respondent received a booth give-away prize in return for completing the survey.

The 2008, 2009, and 2010 Convenience Surveys are almost identical with a few exceptions. The total number of surveys completed in 2010 is 211, with most questions answered and very few missing or no answers. Most of the survey questions were derived from the survey in 2007 included questions regarding awareness or knowledge of water drainage, runoff, and dumping issues, as well as questions about exposure to educational messages and behavioral changes related to viewing the messages.

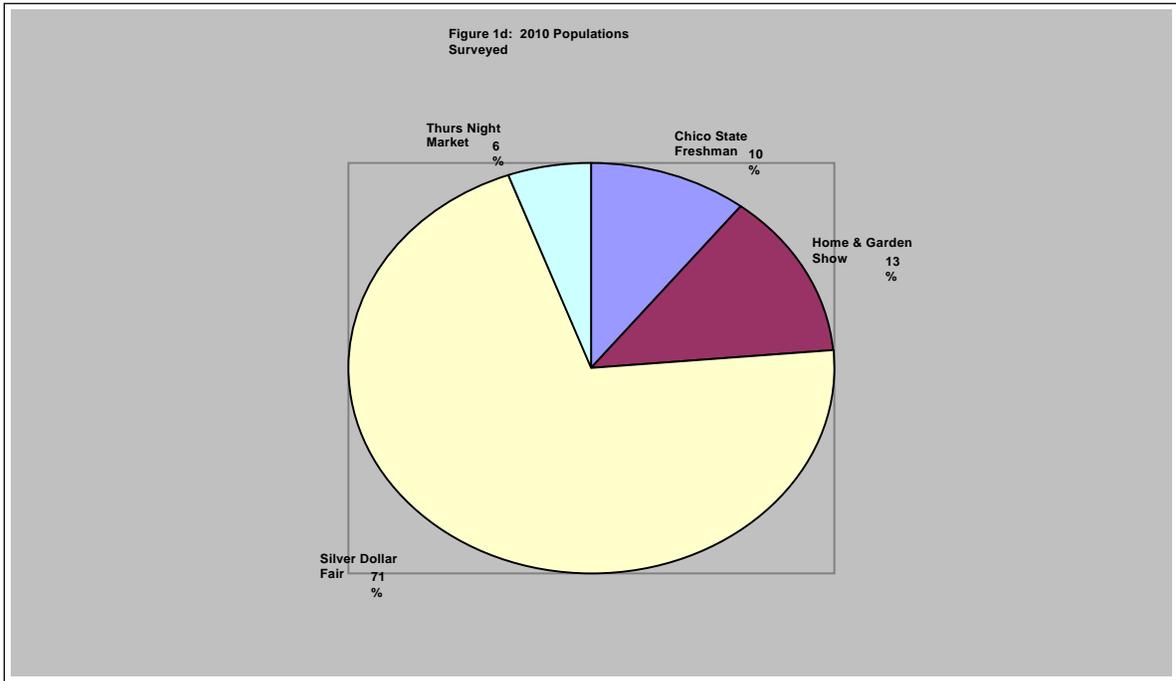
Although the 2008-2010 survey results cannot be compared with the results from the 2005 or 2007 surveys because the data were not collected in the same way, the results from the 2008 and 2009 surveys can be compared to 2010. To shorten the survey and improve clarity, a number of redundant questions in the 2008 survey were deleted for the 2009 survey to create a one-page survey instrument. In addition, the question in 2008 about the storm drain markers was an independent question (q11); in the 2009 and 2010 surveys the storm drain marker question was integrated with a list of educational message sources in question 6. An additional option regarding the Internet site was also added to the list of sources for outreach education messages in 2009 and 2010; in 2010 the question 6 included an additional option about the *Environmentally Friendly Car Wash Fundraiser* (see Appendix B for a copy of the 2008, 2009 and 2010 surveys. Appendix C has an annotated Codebook for 2008, 2009 and 2010 data as they were merged for this project). Finally, the question concerning changes in activities to prevent pollution as a result of the outreach messages (q13 in 2008) was reorganized in the 2009 survey (q7 in 2009) to reflect the difference between what respondents do now to prevent pollution and what they no longer do; this was retained for 2010. The available responses are basically the same; the order in which the respondents view them is different.

Snapshot of Respondents

The survey included only one demographic question, the zip code of the respondent. As Figure 1a shows, in 2008, 61 percent of the survey respondents are Chico residents, 13 percent are Paradise or Oroville residents and the rest are from other places. As Figure 1b shows, in 2009, 55 percent of the survey respondents are Chico residents, 12 percent are Paradise or Oroville residents and the rest are from other places. Figure 1c shows that in 2010, the percentages of each type of resident returned to the 2008 distribution patterns except for the proportion of the Chico respondents. The percentage of Chico respondents increased to 63 percent in 2010. This demonstrates that the results are based on predominately Chico resident opinions and the distribution of respondents between the three surveys is somewhat similar. To assure that the data were not skewed differently because of the slight reduction of Chico residents, the data were compared between the full and the Chico only data. There was no considerable difference in the distribution of responses.



One difference between earlier surveys and the 2010 survey is that the 2010 survey included a small number of Chico State Freshmen, as seen in Figure 1d. Although these respondents comprised 10.4 percent of the survey, a comparison of the distribution of their responses indicates they demonstrate similar patterns to the other sets of respondents. Most of the surveys were conducted at the *Silver Dollar Fair* and the *Home and Garden Show* where there is a cross-section of the Chico population.

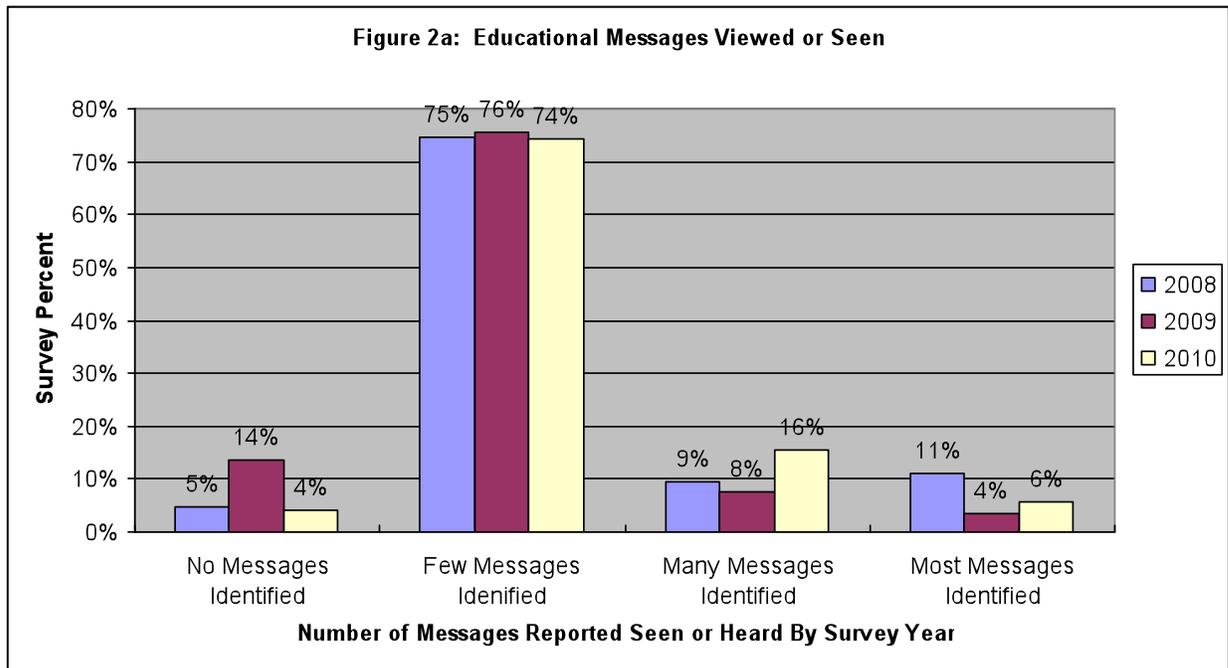


Educational Messages

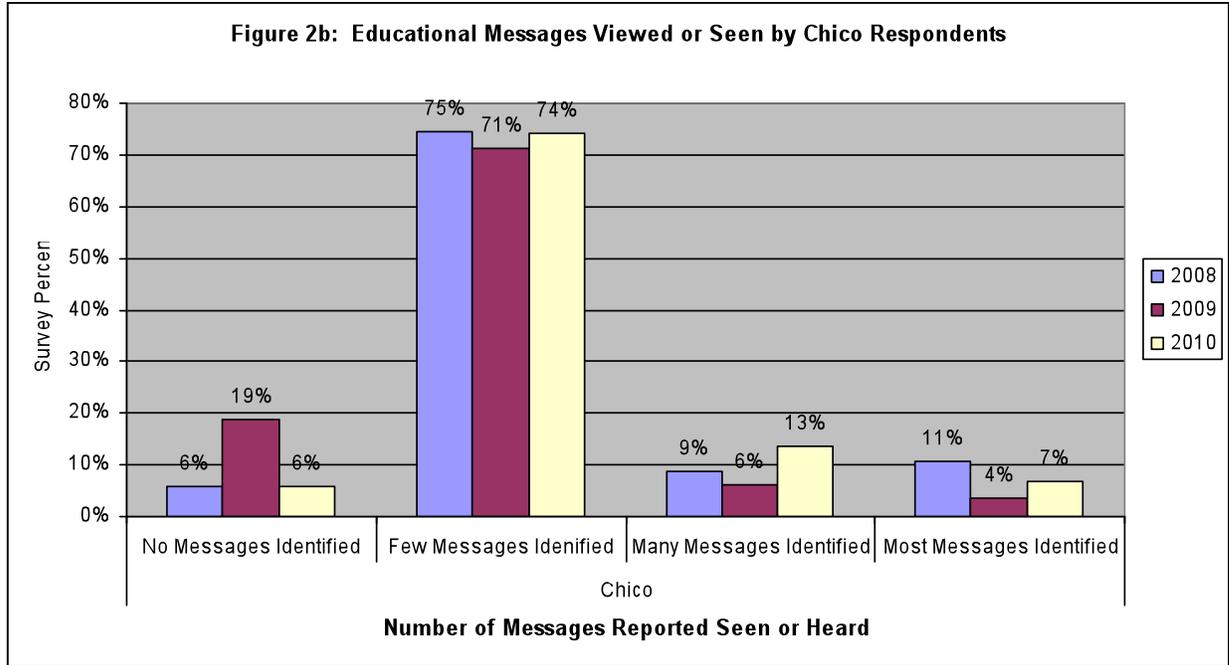
The 2008, 2009 and 2010 surveys included one question to identify which respondents have been exposed to past or present educational outreach messages, and in what format they were exposed to these messages. Respondents were asked:

(2008 q10) (2009-2010 q6) Which of the following messages about keeping our gutters and local creeks free from pollution (such as litter, auto fluids, pet waste, fertilizer, and/or pesticides) did you hear or see recently? (Check all that apply)

In this question, for the 2008, 2009 and 2010 surveys, respondents had the same 9 different media options to choose from and could list other messages viewed or seen. In the 2009 survey, the Storm Drain Markers and Internet site options were added to the list, and in 2010 the Environmentally-Friendly Car Wash Fundraiser was also added. Most of those who checked the “other” option listed events such as Chico Clean up Day, Endangered Species Fair, or Storm Drain Markers in their answers in addition to identifying similar items to those listed. Using just the media options listed in the surveys, the responses were recoded to group the number of types of messages seen or heard to *No Messages*, *Few Messages* (1-3), *Many Messages* (4-6) and *Most Messages* (7-13). Figure 2a shows that an average of 75 percent of the respondents viewed or heard 1-3 messages, and the percentage of the respondents who heard or saw many messages close to *doubled* from previous years. This suggests that many respondents were exposed to multiple messages about keeping the creeks free of pollution. Although there was a slight increase in the percentage of those who did not see the messages in 2009, which is understandable given that the percentage of *Other* (non-Chico) respondents increased as well, this proportion of the survey returned to 2008 levels in the 2010 survey. It is encouraging that there is a persistent core of messages (1-3 educational sources) that respondents remember viewing or hearing.

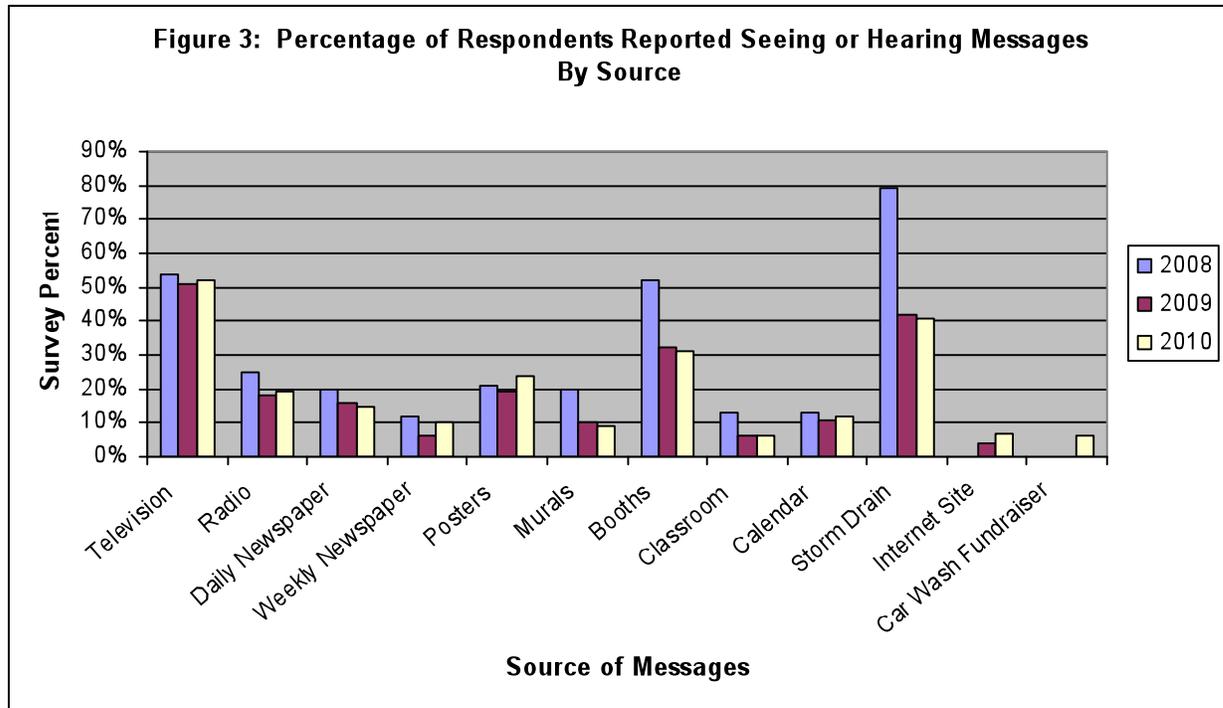


As seen in Figure 2b, the Chico respondents are nearly identical to the full survey indicating that with the exception of the percentage of respondents who did not identify having seen or hear messages, the percentage of the respondents seeing or hearing the outreach messages increased in every category.



This suggests that, in general, the EOP outreach activities have successfully reached the Chico residents, as well as having expanded outside into neighboring communities. This is important because the City of Chico attracts visitors from neighboring communities whose behaviors impact the Chico community waterways. These results suggest that visitors are also reached by the EOP activities.

More specifically, the data suggest that the 2010 EOP outreach activities have generally reached an increased percentage of respondents than in 2009. Figure 3 shows the percentage of respondents who checked off each of the activities on the list for each survey. The greatest exposure seems to have come from television, storm drain markers, and booths at public events as outreach sources. As Figure 3 demonstrates, 51-54 percent of the respondents identified having seen or heard messages from television. Further, the data results also show 19 to 25 percent of the respondents identified seeing or hearing messages from the radio, 15-20 percent from daily newspapers, 6-12 percent from monthly newspapers, and 19-24 percent from posters.



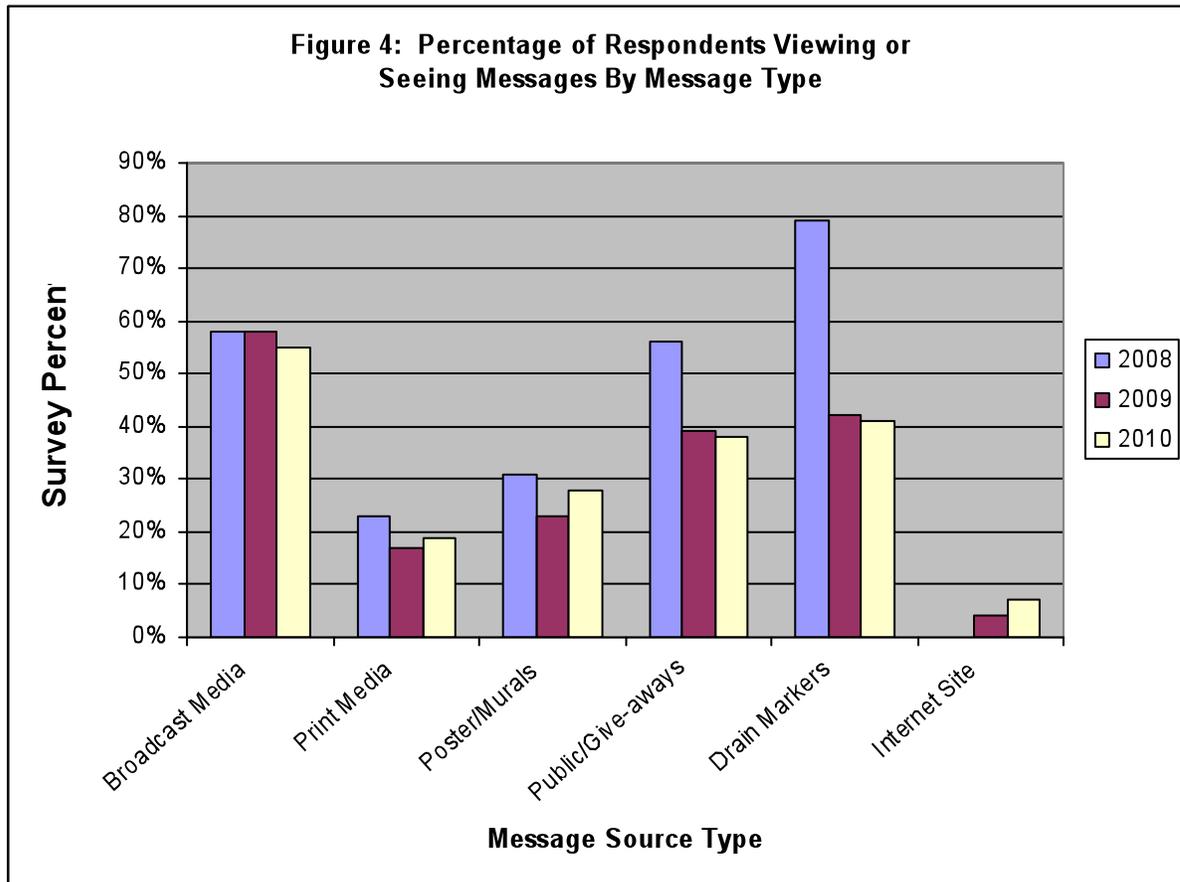
Although the percentage of respondents that reported having seen or heard messages at booths declined from 2008 to 2009, in the 2010 survey the percentage of respondents identifying having seen or heard messages returned to 2008 levels. Indeed, almost each category of outreach activity increased over the 2009 levels. Particularly, as in the past surveys, television, booths at public events, and the storm drain markers are still important components of the educational outreach plan.

The drop from 2008 to 2009 in the percentage of respondents identifying that they had seen or heard the messages may be a result of the question wording. Although the question wording stayed the same, the survey question [(2008 q10) (2009-2010 q6)] asks the respondent to identify messages they had heard or seen *recently*. The word *recently* was perfectly appropriate for the 2008 survey when most of each type of the messages were fairly new to the community. By 2009, the murals, posters, and storm drain markers, for example, would not necessarily be messages the respondent saw recently, but may have been seen within the last two years. Only the messages in television, radio, newspapers, and public events (such as booths or the car wash fundraiser) have been routinely *recent* in characteristics. Ironically, many respondents (78 percent in 2009 and 79 percent in 2010) did not choose *Booth at a public event* even though they all (100 percent) were administered the survey in a booth at a public event! The word *recently* is ambiguous enough as to suggest that some respondents may have seen or heard the messages, but did not indicate such because they did not do so *recently*. In light of this concern, it is important to note that even with this ambiguity perhaps suppressing the percentage that identified seeing or hearing messages, the percentage of respondents increased in each category, except for those who answered that they saw or heard none of the messages.

Alternatively, the drop in the percentage of respondents in the 2009 identifying storm drain markers as a source may be the result of a change in how the question about storm drain markers was asked in each survey. In 2008, the respondents were asked

specifically about the storm drain markers in a separate question, whereas in 2009 and 2010, it was near the end of an 11-12 item list. Nevertheless, the percentage of those respondents identifying storm drain markers as a source of information is still an impressive 41 percent in 2010.

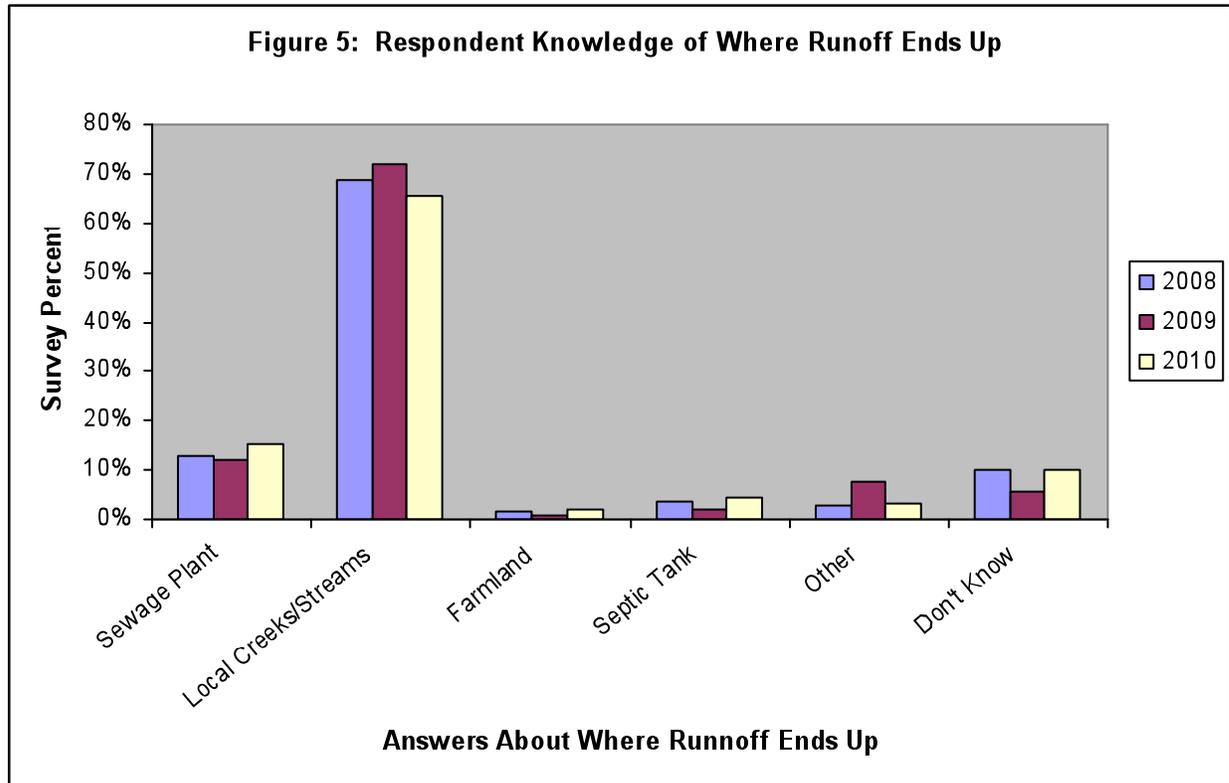
Further, as seen in Figure 4, using data combined by type of media, messages seen through broadcast media were checked-off by 55-58 percent of the respondents. The percentage of respondents identifying print media ranged from 23-17 percent. Public events were the sources for 39 to 56 percent of the respondents, and 23-31 percent of the respondents viewed or heard the messages through viewing posters or murals. Among the sources of outreach messages viewed or seen, broadcast media, public events, and storm drain markers are the predominant media accessed by most of the respondents.



Awareness and Knowledge of Water Drainage and Runoff

Each year the surveys included two questions about the respondent’s awareness and knowledge about where water drainage ends up in the community. The survey results suggest that most of the respondents correctly identified the difference between where runoff and waste water ends up. This is not surprising given the depth and breath of outreach messages in the past and current programs.

Runoff water. Respondents were asked (q1) *In your opinion, where does most of the runoff water from your yard, gutter, street, or road end up?* Figure 5 shows the distribution of respondent opinion about where runoff water ends up.



The survey shows two-thirds of the respondents consistently and correctly identified that the runoff ends up in the local creeks and streams. Consistently, 10 percent or less did not know where the runoff water went, and a few answered that it went into the ground water or some other combination of local creeks and other places¹.

More specifically and interestingly, as seen in Figure 6, of those respondents who correctly identified that the runoff ends up in the creek, 49-61 percent of the respondents report having seen a few messages (one to three message sources).²

¹ Some of the respondents failed to understand that they were to choose one response and they basically answered the question as though it said “check all that apply.” We created a separate variable, *Other*, for those types of answers.

² *Internet site* responses were not in the 2008 survey in question 6.

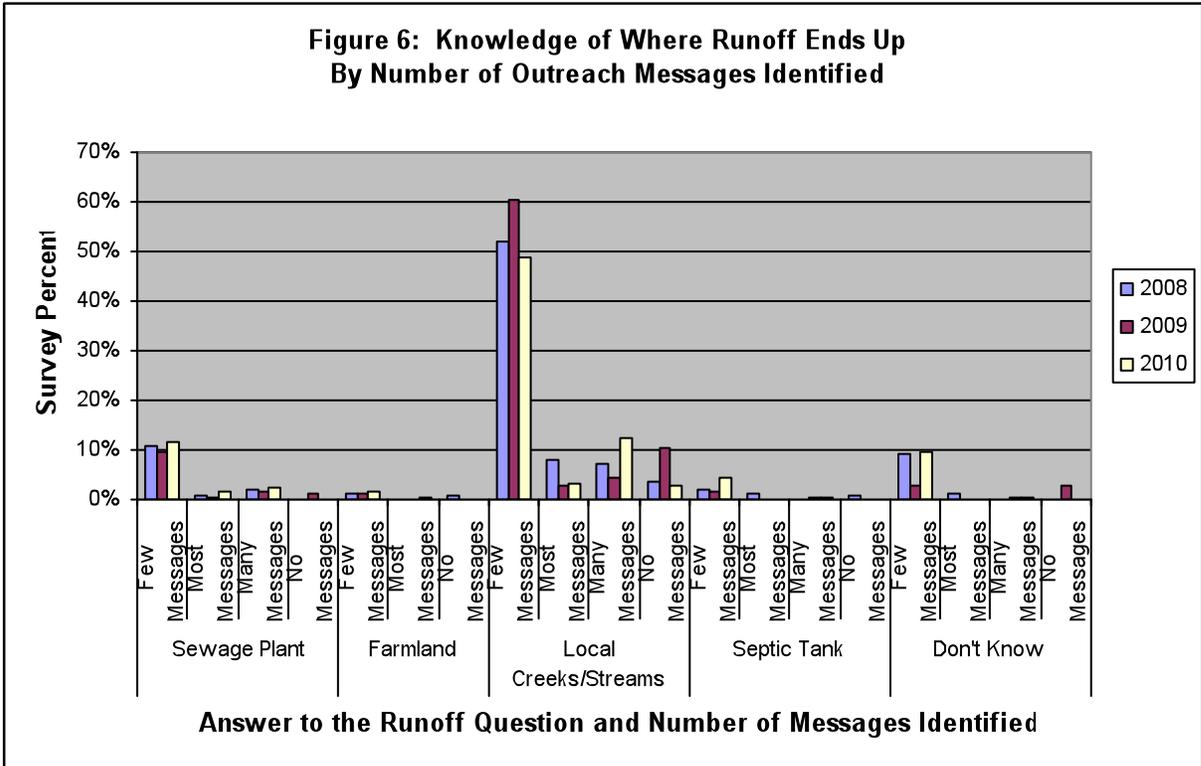
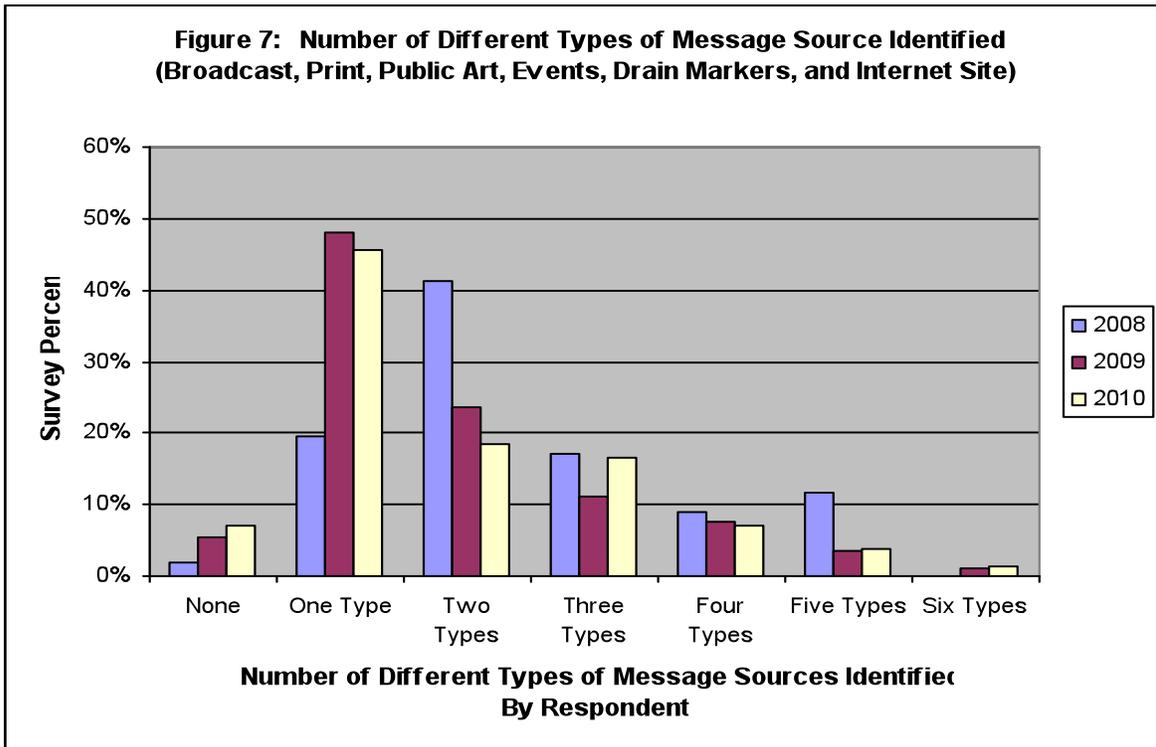
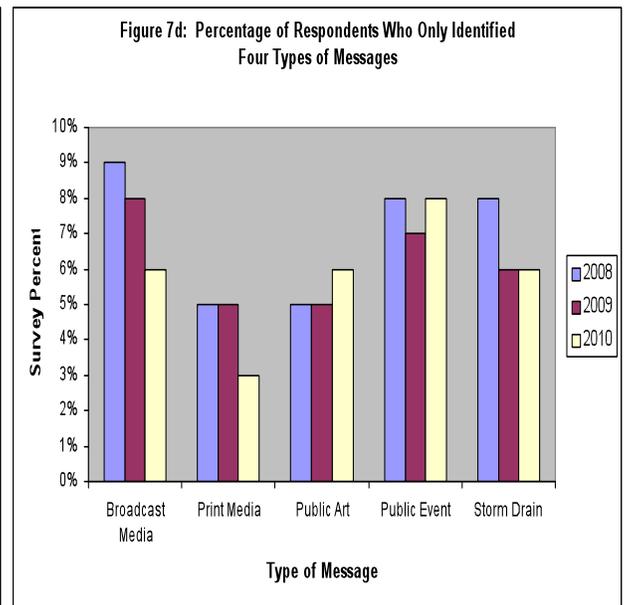
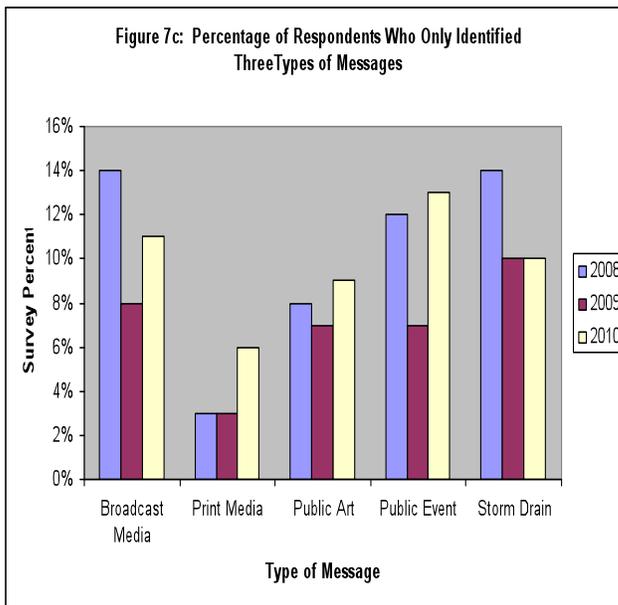
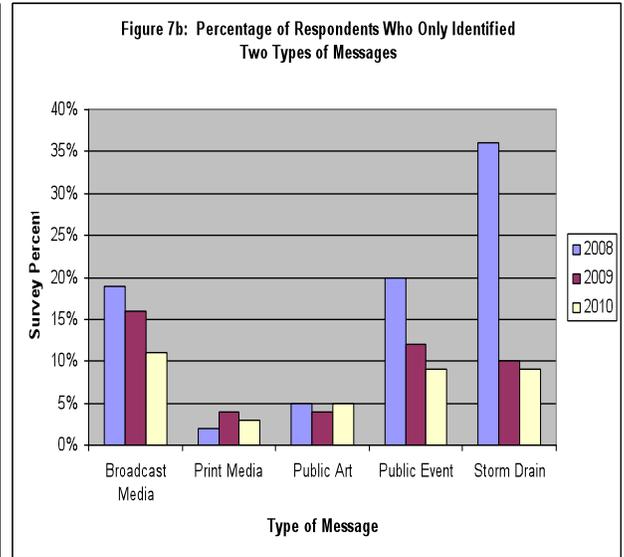
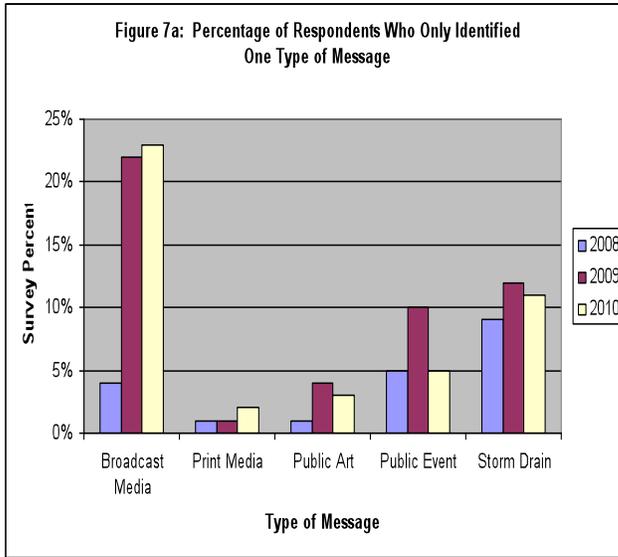


Figure 7 provides additional information about respondents' knowledge by examining the type of media identified as the source of recent information about pollution. Forty-five to 48 percent of the 2009-2010 respondents identified one type of source, which is up from 19 percent in 2008.



Although the percentage of respondents that identify two types of messages has declined by about half since 2008, the percentage that identified three types of message sources has increased since 2009.³ Figures 7a-7d, break down the types of messages into the four most frequently mentioned types⁴.



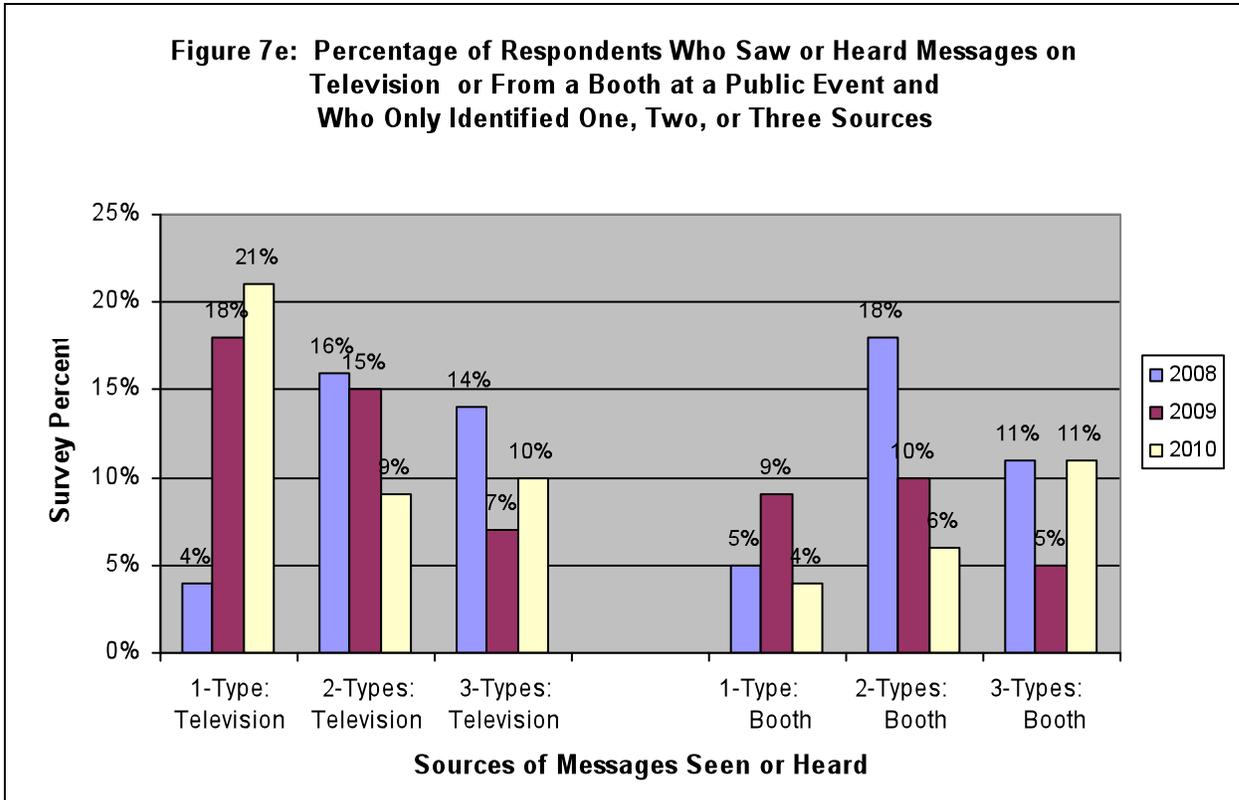
As seen in Figure 7a, *Broadcast Media* outreach messages were consistently viewed by twice the percentage of respondents (who only heard or saw one type of message) as any other EOP message source in 2009 and 2010. While Figure 7b shows a drop in the percentage of respondents who viewed at least two sources of messages, Figures 7c and 7d show an increase in the percentage of respondents viewing three to four message

³ In 2010 and 2008, more Chico residents (the targets of the EOP outreach) answered the surveys.

⁴ The Internet Site was not chosen by those respondents identifying One Type or Three Types. Only 7 respondents selected the choice of Internet Site as a source of their information about pollution.

sources; this increase is particularly strong in the *Broadcast Media, Public Art, and Public Events* categories. The *Storm Drain Markers* category is also prominently identified (close to 10 percent) in cases where respondents identified one or more message sources. These figures show that broadcast media is the predominant source of messages for those respondents who identified one to four types of media. After broadcast media, public events and storm drain markers messages are the most prevalent sources mentioned.

More specifically Figure 7e shows that it is messages from television and public event booths that dominate the memories of respondents.



Of those respondents that identified *Television* alone as the source, the percentage of respondents increased from 4 percent in 2008 to 21 percent in 2010. Those respondents who reported seeing or hearing two to three types of EOP messages, *Television* was identified by at least 9-10 percent of the respondents. Of those respondents who identified *Booths at Public Events* as a single source of information, the percentage of respondents increased from 5 percent in 2008 to 9 percent in 2009 but declined in 2010 to 4 percent. Of those respondents who reported seeing or hearing three types of EOP messages, 11 percent identified a message from *Public Event Booth*. Clearly the media “blasts” prior to administering the survey in 2009 and 2010 at the *Public Event Booth* appear to have had an important and durable impact on the recall of respondents about sources viewed or seen about pollution.

Now, how do these results relate to respondent knowledge about where water run-off ends up? Taking the results from analyses of Figures 7, 7a-7e, Figure 8 shows a cross-tabulation between number of different types of messages viewed or heard by the

respondent. Of those respondents (2009 and 2010) who correctly identified local creeks as the place where run-off ends up, 28-37 percent or close to a third of the respondents also identified one outreach source for information about pollution.

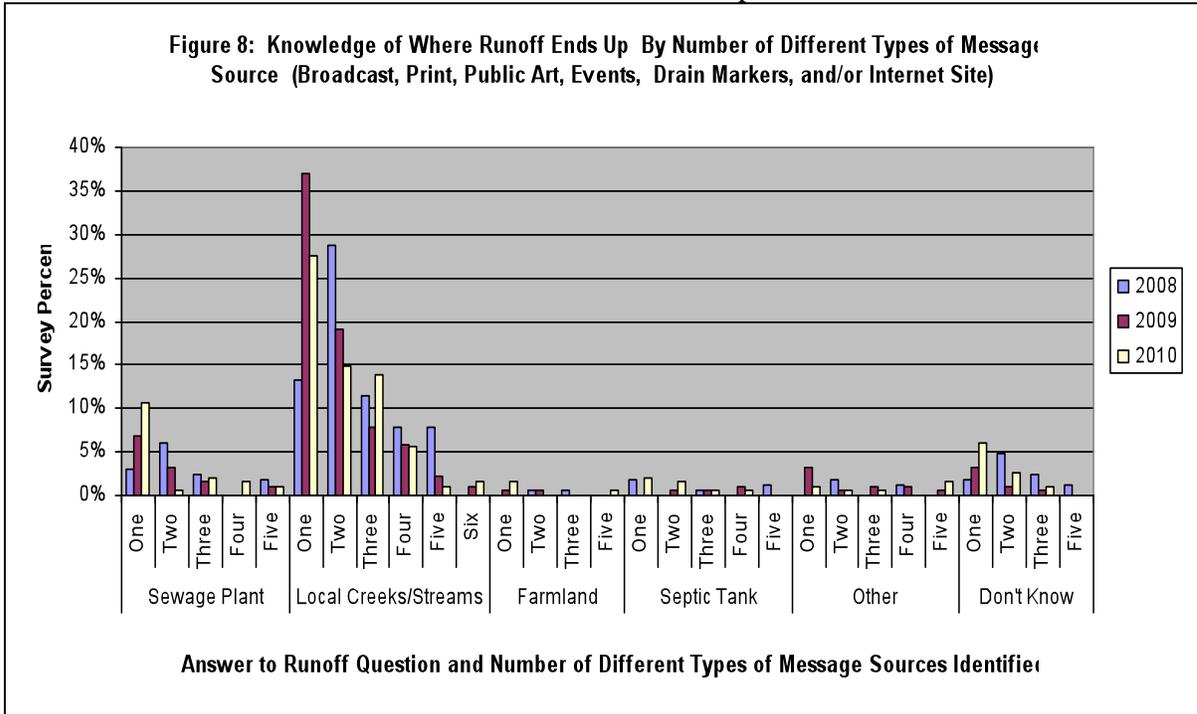
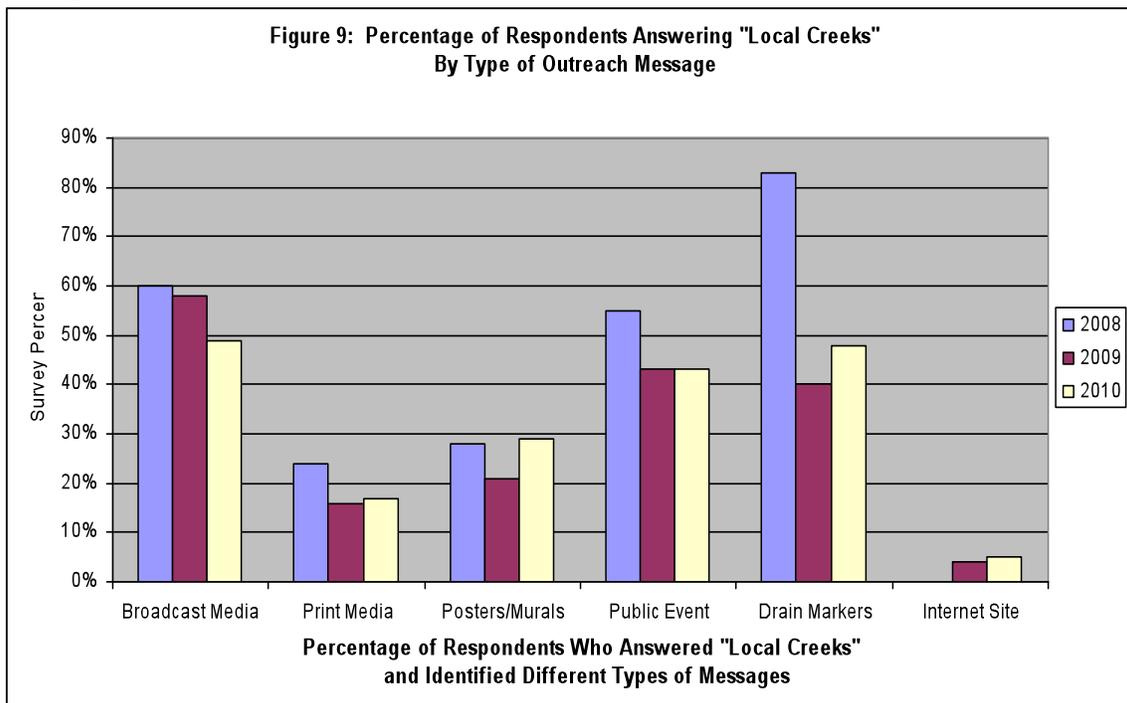
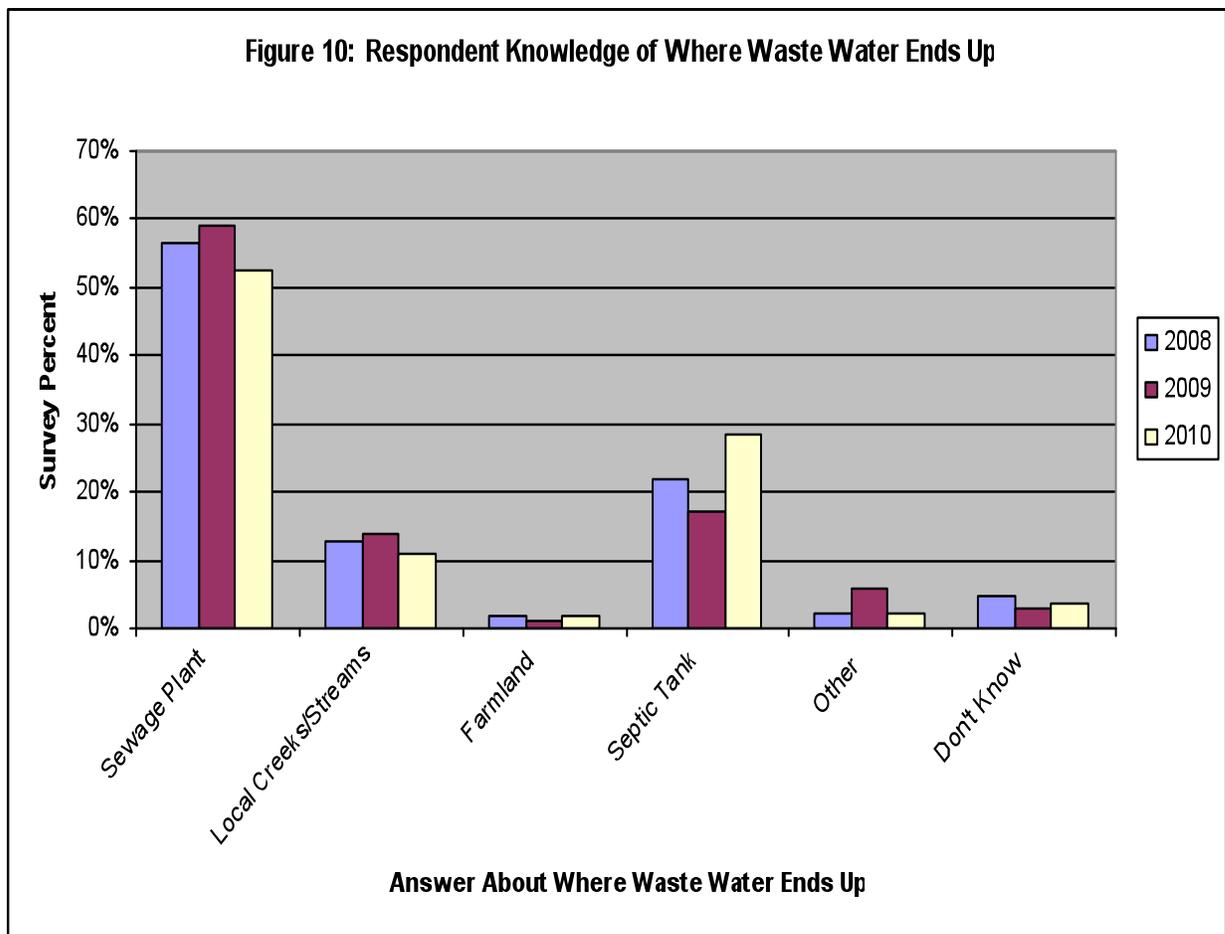


Figure 9 shows this same relationship from another perspective. Clearly respondents who answered that local creeks are where run-off ends up also identified the categories of *Broadcast Media*, *Public Event*, and *Storm Drain Markers* as outreach sources of information about pollution of local creeks.

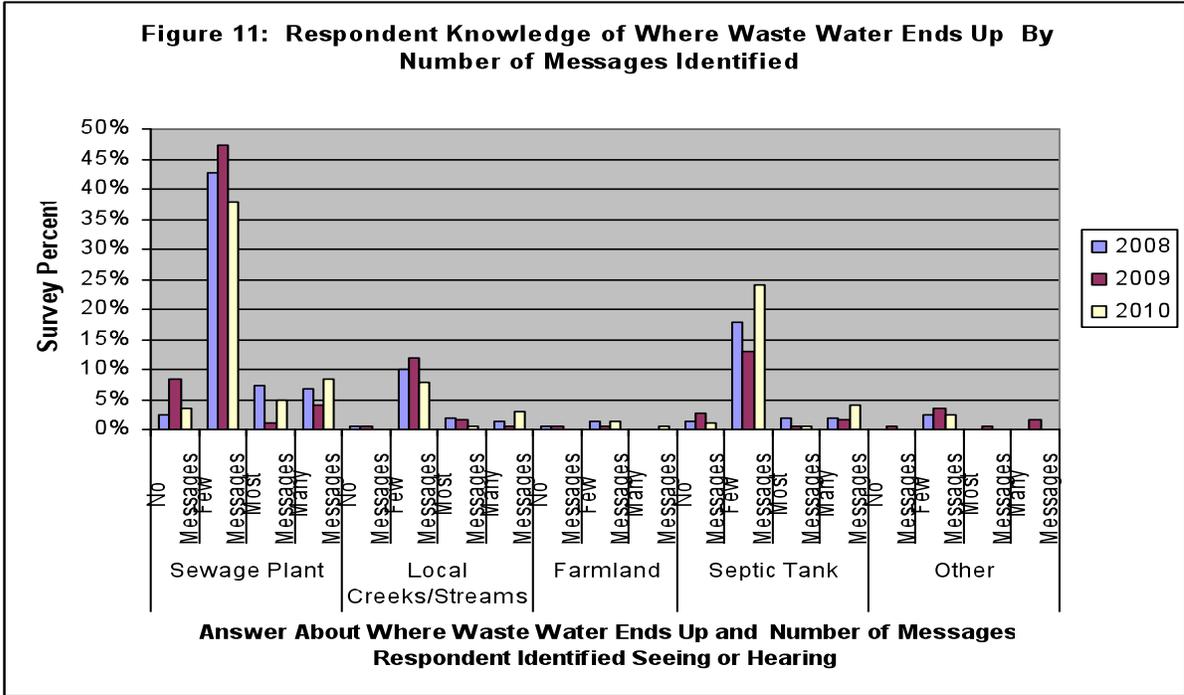


In sum, the data in Figure 6 through Figure 9 are strong indicators of the veracity and durability of the effect of broadcast media, public events, and the storm drain markers for increasing awareness and knowledge of runoff issues. In particular, the data suggest that television commercials, booths at public events, and storm drain markers are the driving and persistent forces for creating a knowledge base within the community over the past three years.

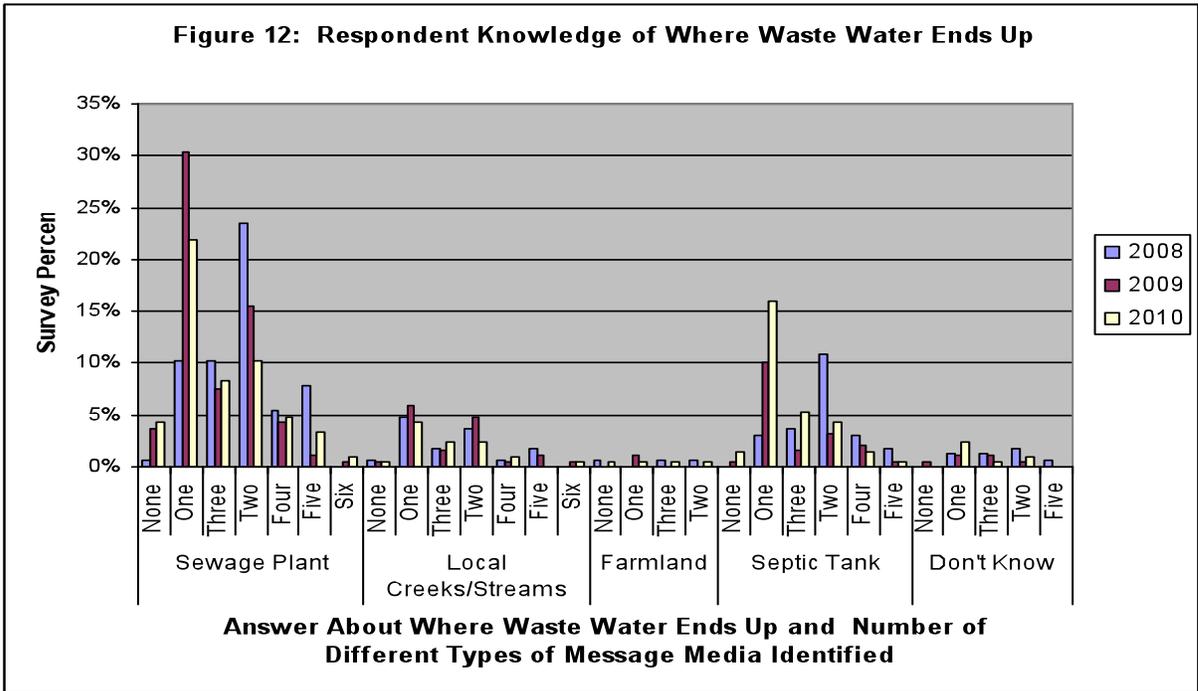
Waste water. Respondents were asked (q2) *In your opinion, where does most of the waste water from flushed toilets, kitchen sink, and bathtub drainage end up?* Figure 10 shows the distribution of the respondent opinion about where waste water ends up. The data show that *over 76 percent* of the respondents in *each* survey correctly identified that waste water goes into the sewage treatment or septic tank, while around 20 percent incorrectly identified that the waste water went into the streams, creeks, or farmlands.



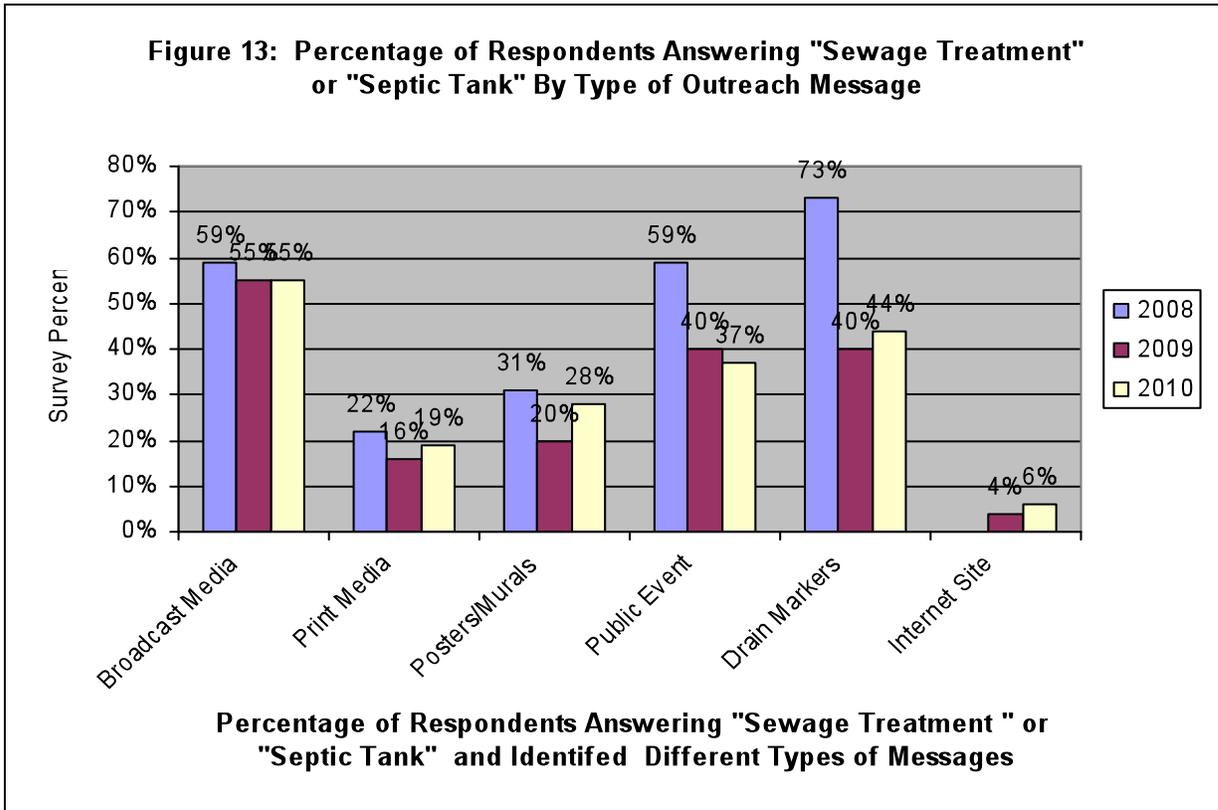
More specifically, Figures 11 and 12 show a closer examination of the relationship between knowledge of where waste water ends up and messages seen or heard. As seen in Figure 11, the data suggest that of those respondents who identified having seen or heard a few messages, over 60 percent of the respondents in each survey understand correctly that waste water ends up in sewage treatment plants or septic tanks.



Likewise, Figure 12 shows that of the different types of messages that respondents reported having seen or heard, those respondents that correctly identified *Sewage Treatment Plant* and *Septic Tanks* also reported seeing or hearing a single type of outreach media; these results are similar to the responses regarding where run-off ends up. Over 20 percent of respondents identified having one seen one type of message in 2010. Interestingly, it appears that as the number of messages increases, more respondents appear to answer correctly that waste water ends up in sewage treatment or septic tanks.



Finally, Figure 13 further refines the relationship between respondent knowledge of where waste water ends up and messages seen or heard. Of those respondents who correctly identified the categories of *Sewage Treatment Plant* or *Septic Tank*, over 55 percent continue to refer to *Broadcast Media*, 37-59 percent identify *Public Events* and 40-44 percent identify *Storm Drain Markers* (73 percent in 2008), as the sources of their information about water pollution over the past three years.



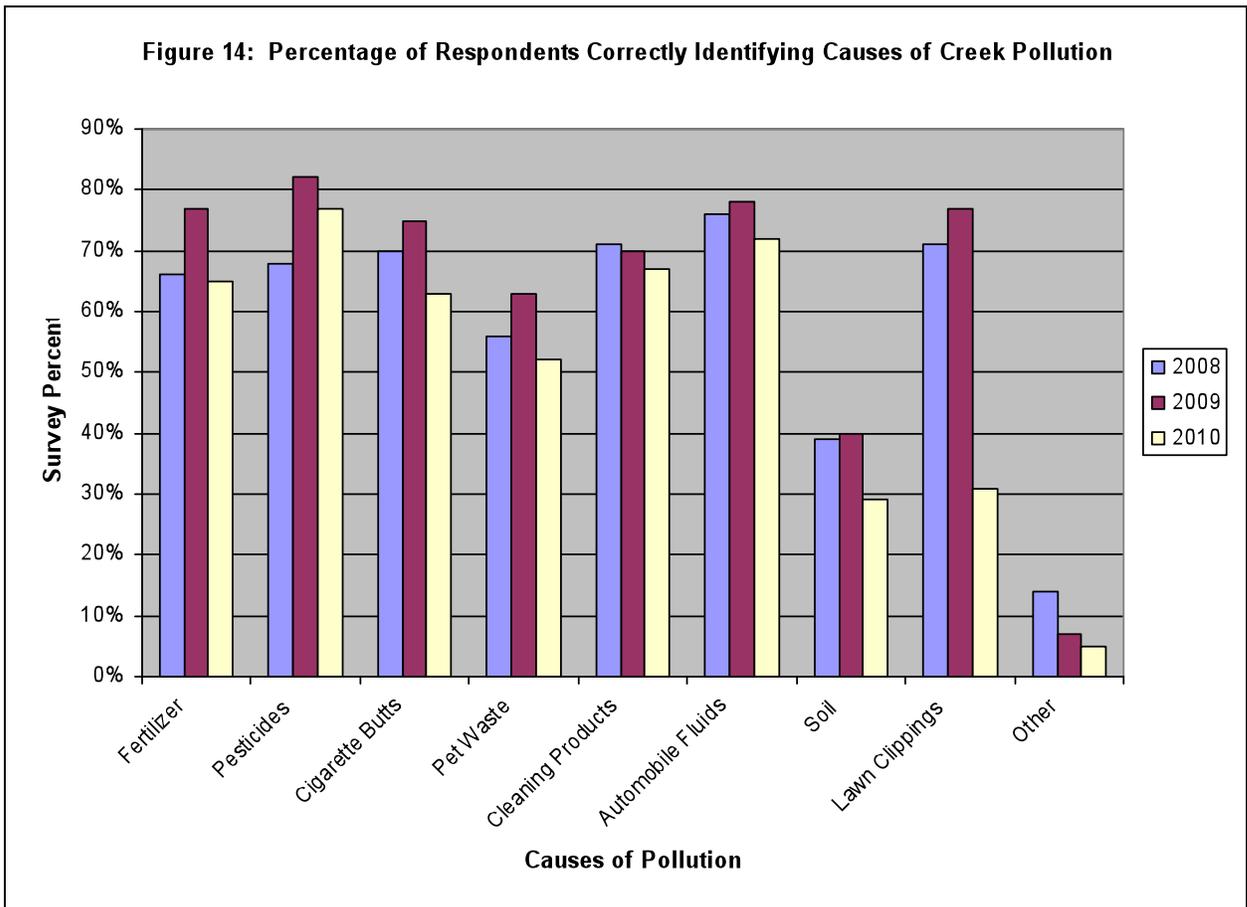
In sum, the data in Figure 10 through Figure 13 provide additional evidence of the veracity and durability of the effect of broadcast media, public events, and storm drain markers for increasing awareness and knowledge of waste water issues. These data validate the results in Figure 5 through Figure 9 indicating that broadcast media and public events are important public outreach education tools, and particularly television and booths at public events, as steadfast and effective components of an educational outreach program. Permanent visual displays, such as posters, murals, and storm drain markers, also persistently reach over between 20 to 44 percent of the respondents.

Awareness and Knowledge of Causes of Creek Pollution

The survey included questions that ask respondents to identify pollutants from a list as well as their opinions about particular items on the list. Various media outreach messages particularly targeted pollution from fertilizer, pesticides, cigarette butts, pet waste, cleaning products, automobile fluids, soil, and green waste. TV commercials focused on either pollution from pesticides and fertilizers, or automobile fluids, or general pollutants such as litter, pet waste, cleaning products (i.e. car washing). Radio commercials targeted general pollutants. These broadcast media messages were direct

and used concrete language identifying the offending behavior or products. Alternatively, the newspaper ads, posters, murals, and booth events focused on more artistic, abstract, and creative messages about the harmful effects of pollutants. The survey results indicate both knowledge and awareness of materials known as pollutants, particularly those pollutants directly mentioned in the broadcast media messages. The results suggest a much larger percentage were knowledgeable or aware of pollutants which were repeatedly targeted in the outreach activities. Some of the less targeted items, such as soil and green waste, had a smaller percentage of respondents who either recognized or thought of these items as pollutants of creeks and streams.

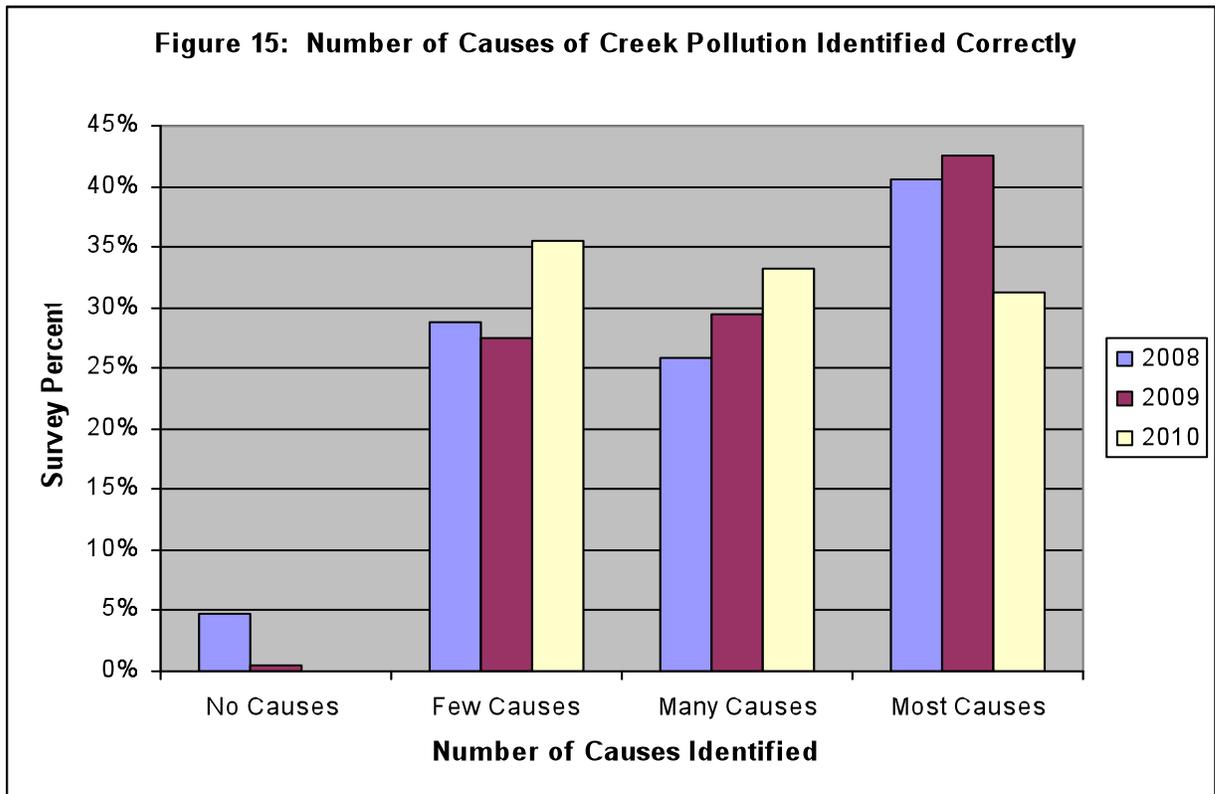
Identification of causes of creek pollution. Respondents were asked (q3) *Which of the following do you think causes pollution of our local creeks?* The respondents were then given a list of pollutants and asked to choose all those response categories they thought were causes of pollution of local creeks. A summary of the results, as shown in Figure 14, indicates a large increase from 2008 to 2009 in the percentage of respondents that correctly identified pollutants who also identified hearing or seeing a few of the EOP outreach messages, but a decline in 2010.



Still, in 2010, over two thirds of the respondents correctly identified fertilizer and pesticides as pollutants. Over half of the respondents identified pet waste as a pollutant. Nearly 70 percent of the respondents continued to identify cleaning products, over 70 percent identify automobile fluids, and over 30 percent identified soil as causes of creek pollution. There has been a notable decline in those identifying lawn clippings as a cause

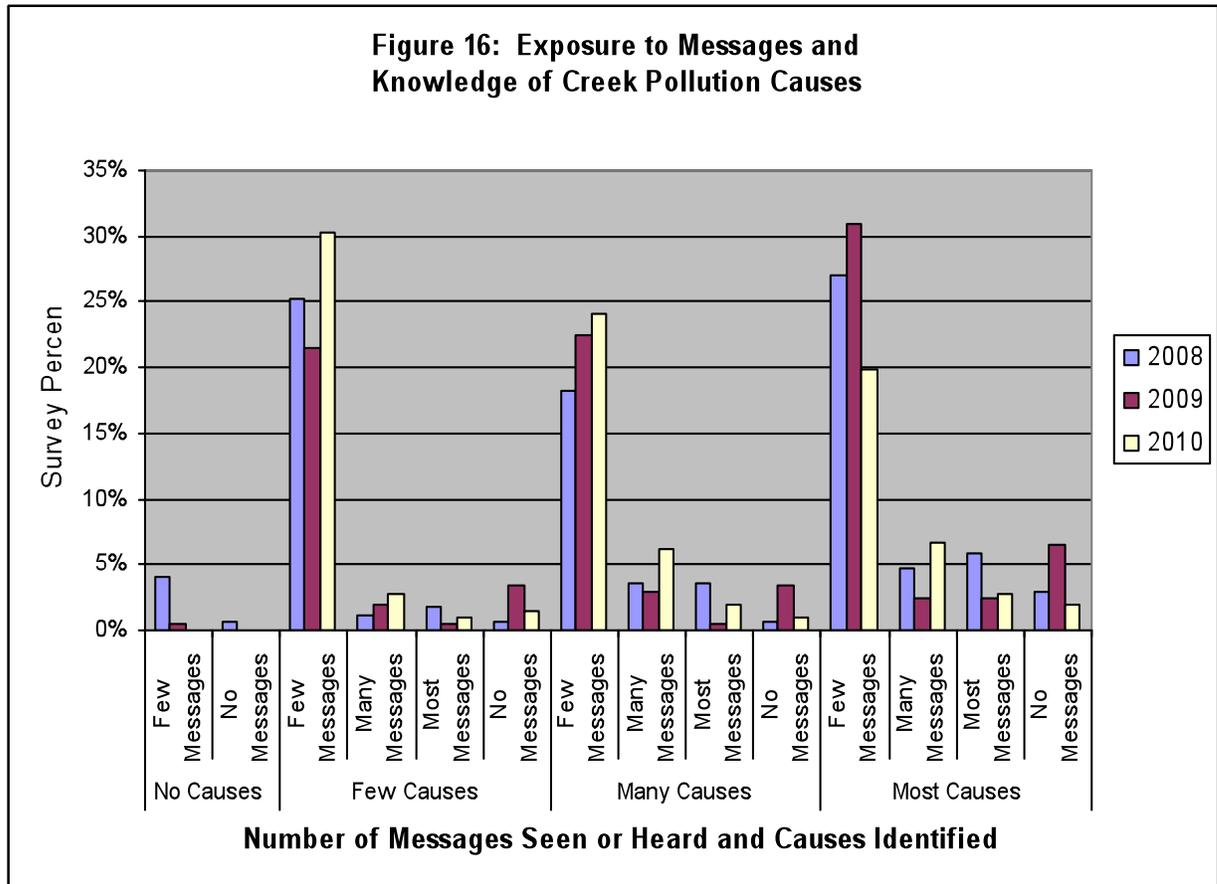
of pollution; this indicates, perhaps, an area that may need additional attention in future EOP activities.

Another way to view respondent knowledge of pollutants is to examine the number of items correctly identified in q3 (*knowledge of causes*). Figure 15 shows a notable drop, from 5 percent to 0 percent, of the respondents that were *unable* to identify any of the items from the list as pollutants from 2008 to 2010. Almost all the respondents were able to identify at least a few items, whereas 31 percent of the respondents were able to identify most if not all of the items as pollutants in 2010. Both the categories of *Few* (1-3 causes) and *Many* (4-6 causes) show increases from 2008 to 2010. This suggests that the respondents in the 2010 survey were more knowledgeable about causes of creek pollution than those in the earlier surveys.



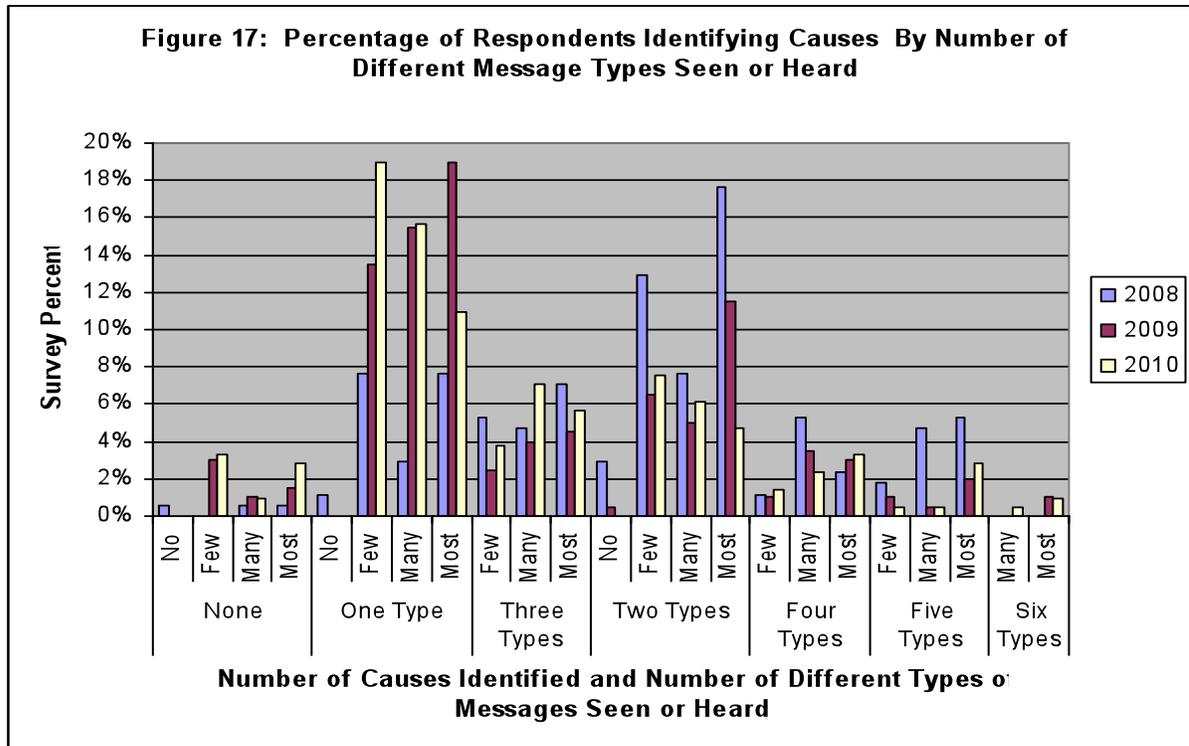
Educational messages and knowledge of causes. One way to indirectly examine the impact of exposure to outreach messages is to check the relationship between knowledge and exposure. Using cross tabulation, Figure 16 shows the relationship between q3 (*knowledge*) and q10 (2008) and q6 (2009-2010) (*messages*). In 2010, over 30 percent of the respondents in 2010 identified a *Few* causes of creek pollution. Over 24 percent of the respondents who saw a *Few* (1-3) outreach messages also correctly identified *Many* (4-6) of the causes of creek pollution.

Further, as Figure 16 shows, still 20 percent of the respondents in 2010 identified *Most* (7-9) all of the causes of creek pollution identified in the survey. There is a notable increase in the percentage of respondents who can identify *Few* and *Many* causes in 2010. Given that all these causes of creek pollution were direct and indirect targets of a variety of outreach messages, particularly of the television and radio media “blasts” just prior to administering the survey, the results suggest that the outreach messages have been, and continue to be, important educational and knowledge building tools in the community.



Finally, as the data so far suggest, it appears that just a few messages have had efficient and effective impacts on respondent knowledge of creek pollution. To examine this further, the data in Figure 17 demonstrate the cross-tabular relationship between how many types of messages respondents reported having seen or heard and how many causes they were able to correctly identify.

As suggested earlier, one type of message, usually television, booths at public events, and storm drain markers, is associated with high levels of respondent knowledge about runoff and creek pollution. The data shows that one type of message is associated with 2010 respondents who know a *Few* causes (19 percent), *Many* causes (16 percent), and *Most* causes (11 percent) comprising approximately 45 percent of the survey responses. Markedly, the percentage of respondents who reported hearing or seeing the messages recently and who cannot identify any causes is nonexistent in the 2010 survey. Without a doubt, the outreach messages are creating a meaningful and durable knowledge base within the community.



Direct and Indirect Measures of Behavior Changes

The primary goal of the previous and current outreach programs was to promote best management practices (BMP) for preventing urban runoff, particularly by changing behavior through educating the public so that their behavioral choices are consistent with these practices. The survey included three questions which directly or indirectly identify respondent behaviors that exhibit best management practices. These questions include:

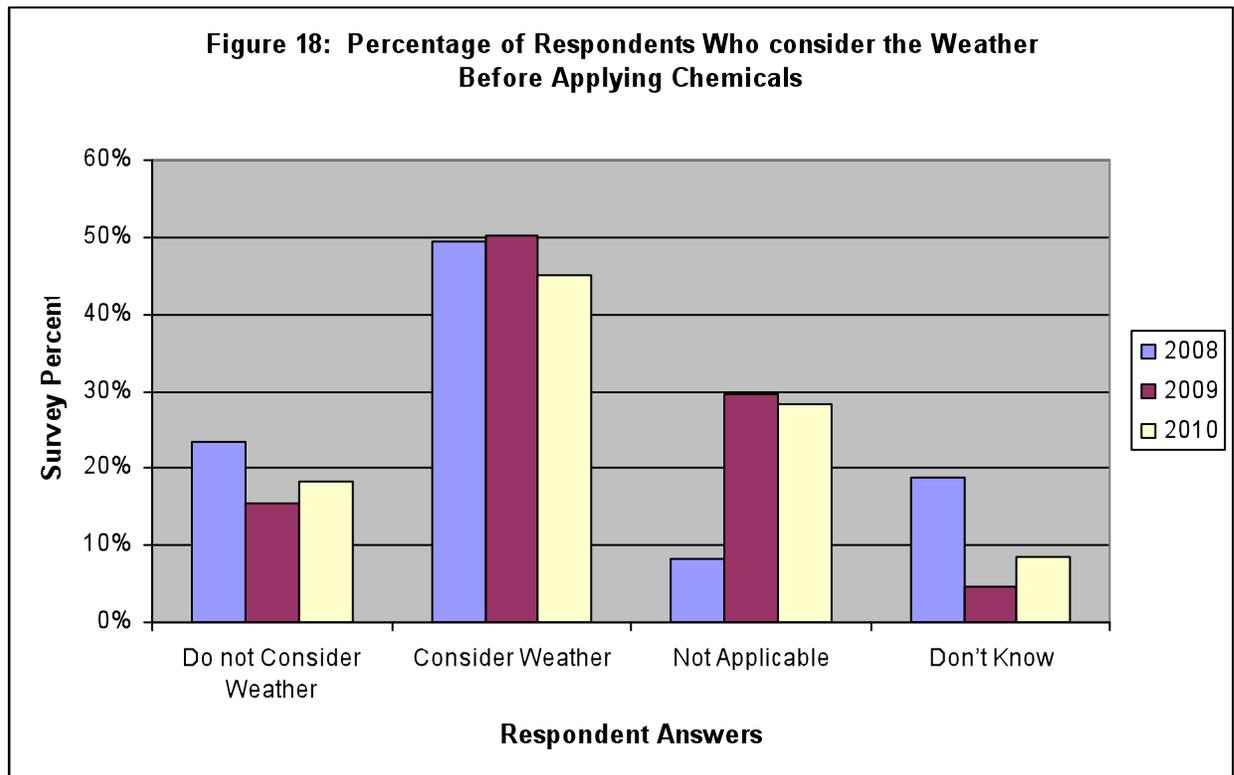
(q4) Do you consider the weather forecast before applying or having someone apply pesticides and fertilizers to your lawn, garden, or outside plants?

2008 (q5) Where do you wash your motor vehicle, lawn mower, camper, and/or RV? (Check all that apply)

*2009-2010 (q5) Where do you wash your motor vehicle, lawn mower, camper, and/or RV **most of the time**?*

(2008 q13) (2009-2010 q7) Which of the following activities have you changed as a result of local messages about protecting our creeks and streams from water pollution within the past year? (Check all that apply)

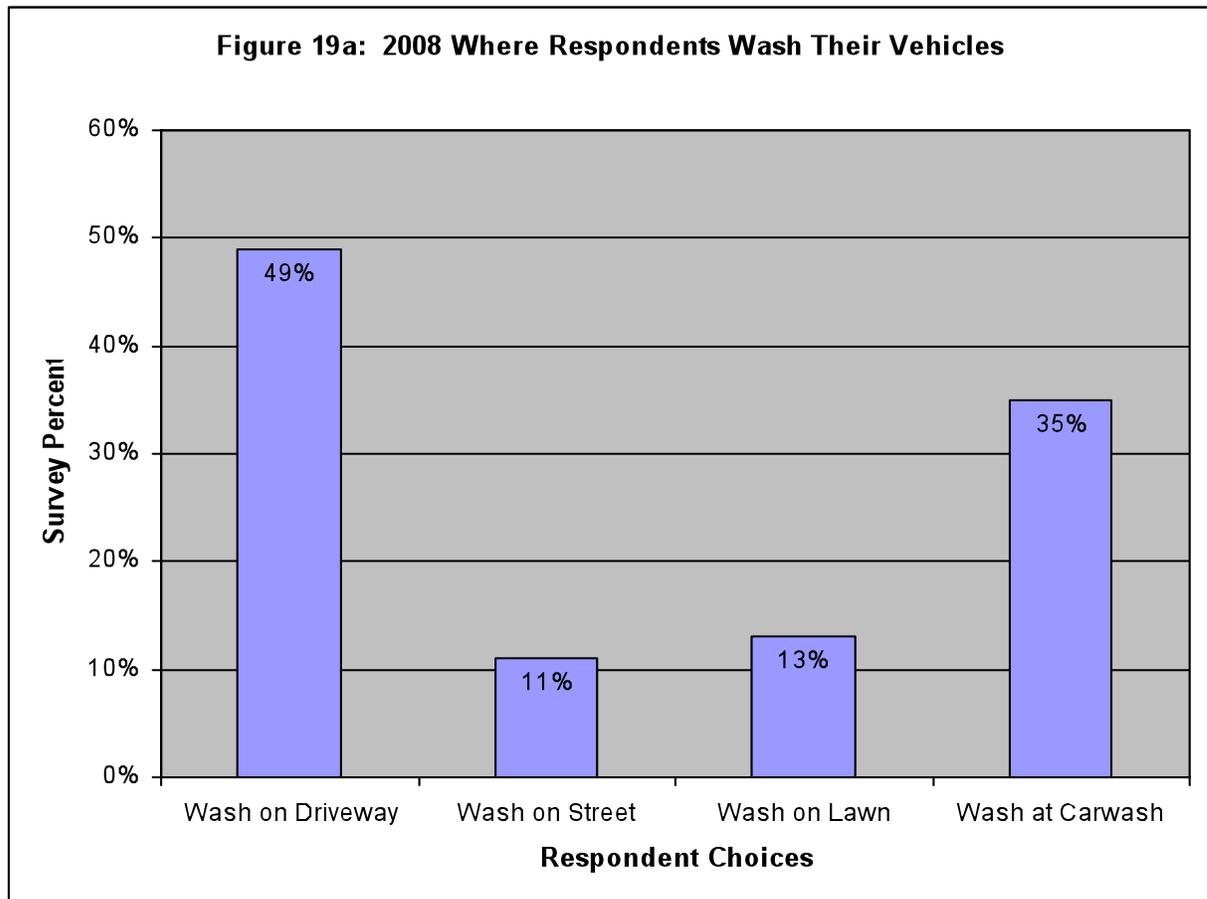
Checking the weather. Proper use of pesticides and fertilizers has been the target of broadcast media outreach and of some public event outreach messages. One direct measure of whether behavior is consistent with BMPs is if the respondent checks the weather before applying lawn and garden care chemicals to minimize potential pollution through runoff due to rain (q4). As Figure 18 shows, 45 to 50 percent of all respondents acknowledge that they checked the weather forecast before applying plant chemicals.



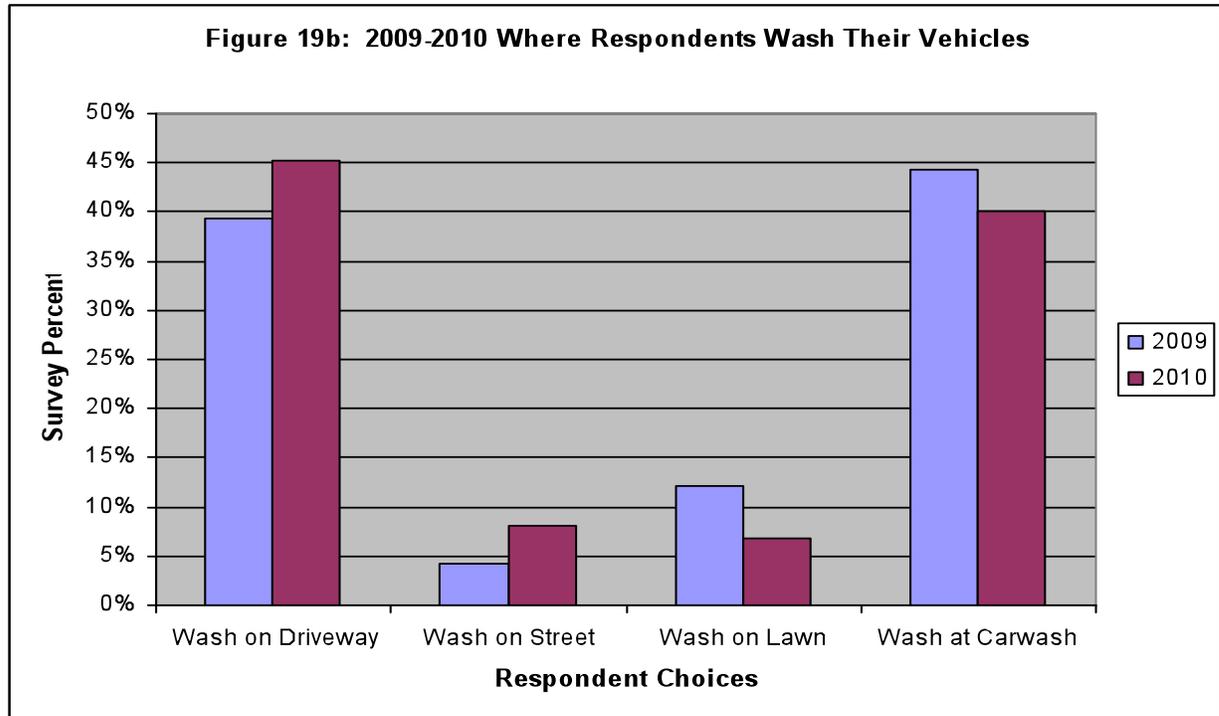
Only 18 percent of the 2010 respondents do not check the weather, which is down from 24 percent in 2008 but up from 2009 levels. Interestingly, the percentage of respondents who answered *Not Applicable* increased appreciably in 2009 and 2010 from 2008 percentages; this may be an indicator of a shift in housing choices, given that often only home dwellers have lawns and gardens. Also of note is the large decline in those respondents answering *Don't Know*, from 19 percent in 2008 to 5 percent in 2009, and up slightly to 9 percent in 2010. This indicates that respondents are fairly consistently demonstrating BMPs regarding use of fertilizers and pesticides, and more are knowledgeable about the need to do so.

Washing vehicles. Run-off pollution from car washing (soap as a pollutant) has been the focus of a variety of high profile outreach messages, including *Broadcast Media*, *Print Media*, *Public Art* (posters and murals), and *Public Events* (especially the booths and environmentally-friendly car wash fundraisers). In 2010 a concentrated effort

was placed on educating charity car wash fundraiser groups on how to conduct eco-friendly car washes. This outreach was documented by the press, which raised general awareness of the issue. Another direct measure of the effectiveness of these outreach messages in achieving BMPs is whether respondents are avoiding washing their vehicles where runoff could end up in the creeks through the gutters, as measured through q5 responses. As noted earlier, q5 (where respondent washes vehicles) was asked differently in 2008 with *Check all that apply* but in 2009-2010 respondents were asked to choose one method they use *most of the time*. As seen in Figure 19a many 2008 respondents used the street (11 percent) or driveway (49 percent) to wash their vehicles; 35 percent of the respondents reported using a carwash, and only 13 percent reported using the lawn.



In 2009-2010 (Figure 19b), 37 percent of respondents reported using the driveway but only 4 percent use the street to wash their cars. While the survey data from 2008 and 2009-2010 cannot be compared due to question wording differences, there appears to be a larger percentage of respondents who use carwashes (40-44 percent) in 2009-2010.

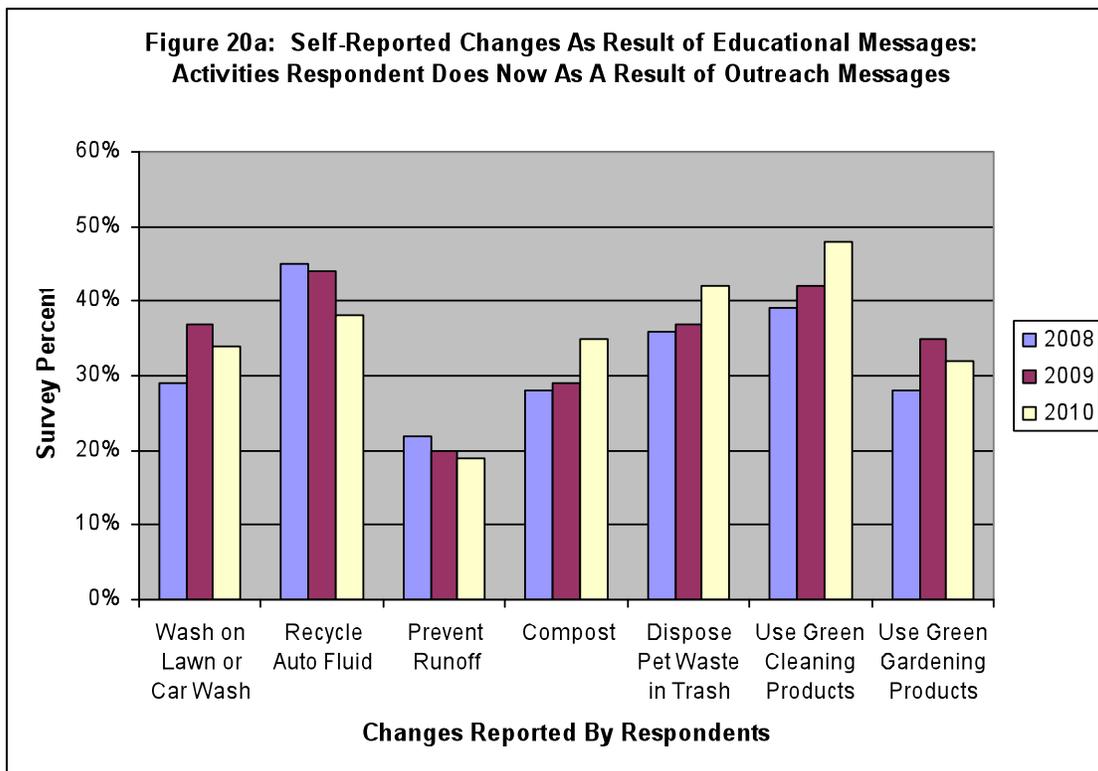


Alternatively, in 2010, the percentage of respondents saying they wash their cars on the driveway increased. This result may be related to question wording problems. Although respondents were not asked to provide additional methods, many treated the question as though it was a *Check all that apply* format. Some respondents who said they washed the car on the driveway also wrote that their driveways were gravel. The reason the question was changed from 2008 was to force respondents into identifying which method they use the most. Clearly, many respondents use a combination of methods. Given the focus of the outreach messages on using the lawn for carwashing as a best management practice, it is expected that the percentage of exclusive use of these places would be higher; it was neither in 2008 nor 2009-2010. Perhaps the question should be divided into two parts where the first part asks respondents where they wash their vehicles most of the time, and then the second part asks respondents to report where else they wash their vehicles. It is also possible that during the recent economic downturn, some respondents who would have washed their cars at a car wash may have switched to washing the car at home. Regardless of the possible reasons, increasing the visibility of environmentally-friendly car wash techniques is clearly warranted.

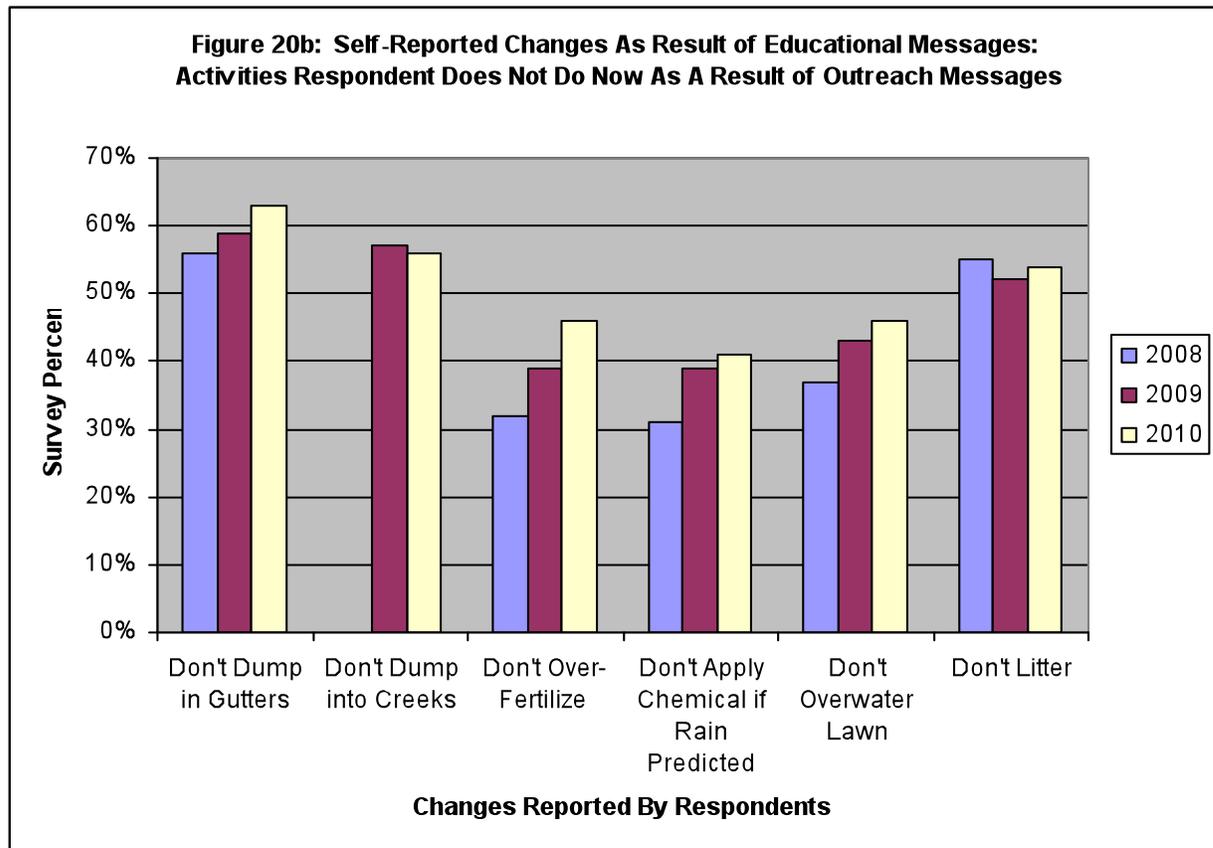
Identified changes in behavior. Questions q13 in 2008 and q7 in 2009-2010 require the respondent to identify changes in their practices occurring after they viewed or heard messages. In 2008, prior to answering q13, respondents were asked if they have made changes in activities after viewing any message about local water pollution and 49 percent of the respondents answered *yes*. In 2009-2010, respondents were given the question in the negative as a choice toward the end after a 13 item list of activities that were changed in q7. The choice now is to check (or not) the box next to the phrase *I did not make any changes*; only **10 percent of the survey respondents said they did not make any changes**. This implies that 90 percent of the respondents in 2009 made changes; in

2010, more than 96 percent of the respondents did not check that box. While these two questions are clearly not comparable because of question placement and question wording differences, it is suggestive that almost all respondents made changes in their activities after hearing or seeing messages about causes of local creek pollution.

Question 13 (in 2008) and question 7 (in 2009-2010) ask respondents to identify changes in activities or practices they made after hearing or seeing local messages about creek pollution from a provided list; they were asked to check all that apply to them. In 2008, the list was somewhat random, and not grouped into any particular categories or order. Both new practices and curtailed bad practices were listed together. To determine the difference between new positive behaviors and negative behaviors no longer practiced, in 2009-2010 the list of activities were reorganized along *Now I do* (new practices) and *Now I do not* (behaviors no longer practiced). The descriptions of the activities stayed the same for the most part, with a few grammatical changes in a few of the items in the list. One descriptive word change, from *environmentally-friendly* to *green*, was made to more closely mirror popular culture terminology. As seen in Figure 20a, the 2010 survey results show increases in the percentage of respondents reporting that they now use BMPs as a result of local messages about water pollution in composting (35 percent), pet waste disposal (42 percent), and green cleaning products (32 percent). Using BMPs for car washing, and green gardening products (both over 30 percent) is down a bit from 2009 levels, but both show increases over the 2008 levels. This is particularly encouraging because fertilizers, pesticides, and vehicle washing were primary targets of most of the outreach messages. Clearly, the past and present outreach messages have resulted in self-reported positive changes in how respondents handle household, yard, and auto care pollutants which could result in runoff pollution of local creeks and streams.



Likewise, respondents also self-reported that they have positively changed other practices that cause pollution. As shown in Figure 20b, a greater percentage of 2010 respondents than in 2008 and 2009 report that they *Do Not*, as a result of local pollution-prevention messages, dump in gutters, over-fertilize, apply chemicals if rain is predicted, or over-water lawns ; 41-63 percent of changed these practices. The data in 2010 also show increases in every category except littering⁵. A lower percentage in 2009-2010 report that they *Don't Litter* but that is somewhat understandable, given that admonitions against littering are well-founded within American culture and many respondents may have already chosen not to litter prior to hearing or seeing outreach messages about littering.

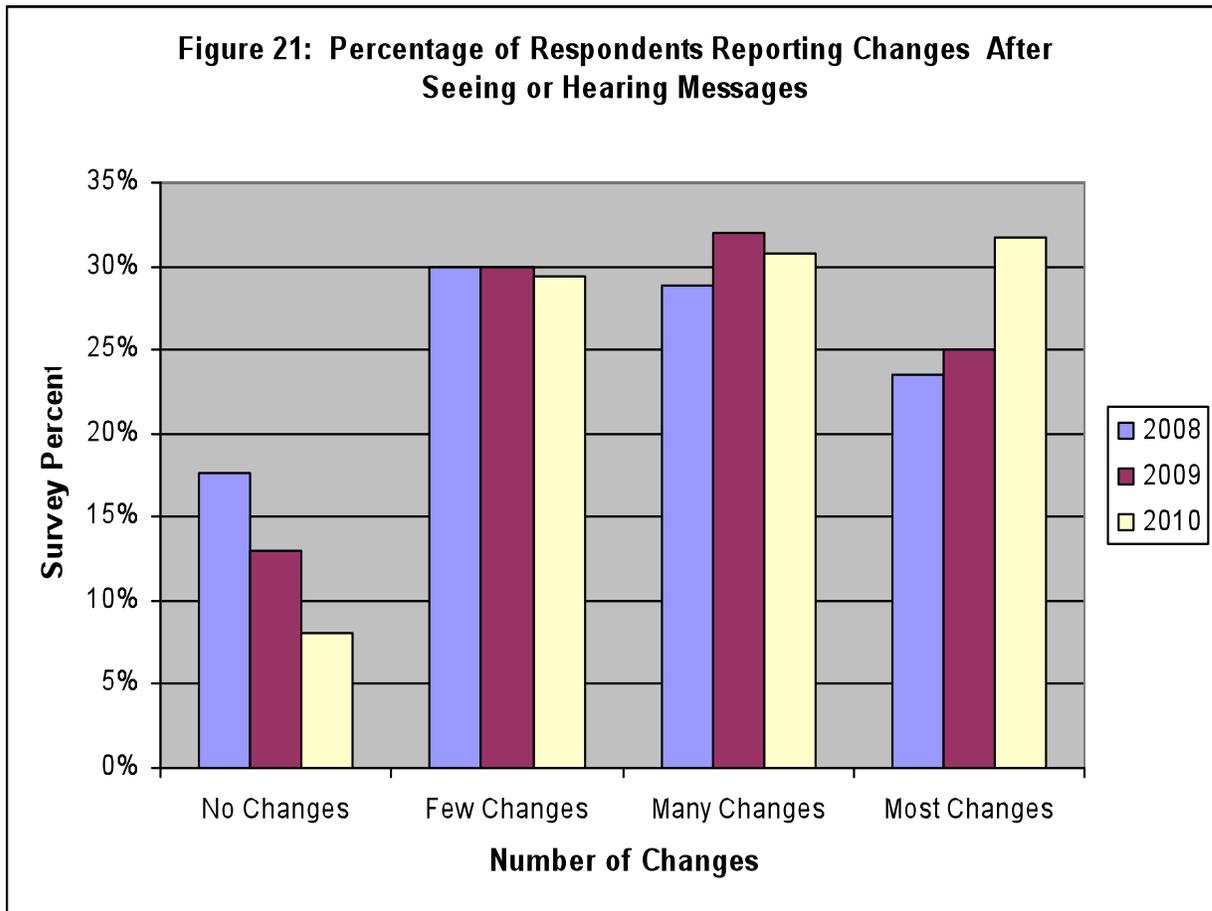


It might be expected that the percentage of the respondents who acknowledge changing to good habits or breaking old habits should be higher; and indeed it could be. One problem that is not immediately apparent but could be depressing the percentage of those who embrace BMPs is that the survey question (q7) does not distinguish between those who have the opportunity to change their activities, and those who do not. More specifically, respondents who do not own vehicles, have a lawn, have a pet, have a garden, or smoke would only be able to choose changes involving green cleaning products, dumping (gutters or creeks), and littering with trash. Alternatively, the survey question does not provide an opportunity for those who already engage in BMPs to indicate that they already use these practices. This situation provides such a respondent

⁵ The response *Dump anything into creeks or streams* was not in the 2008 survey.

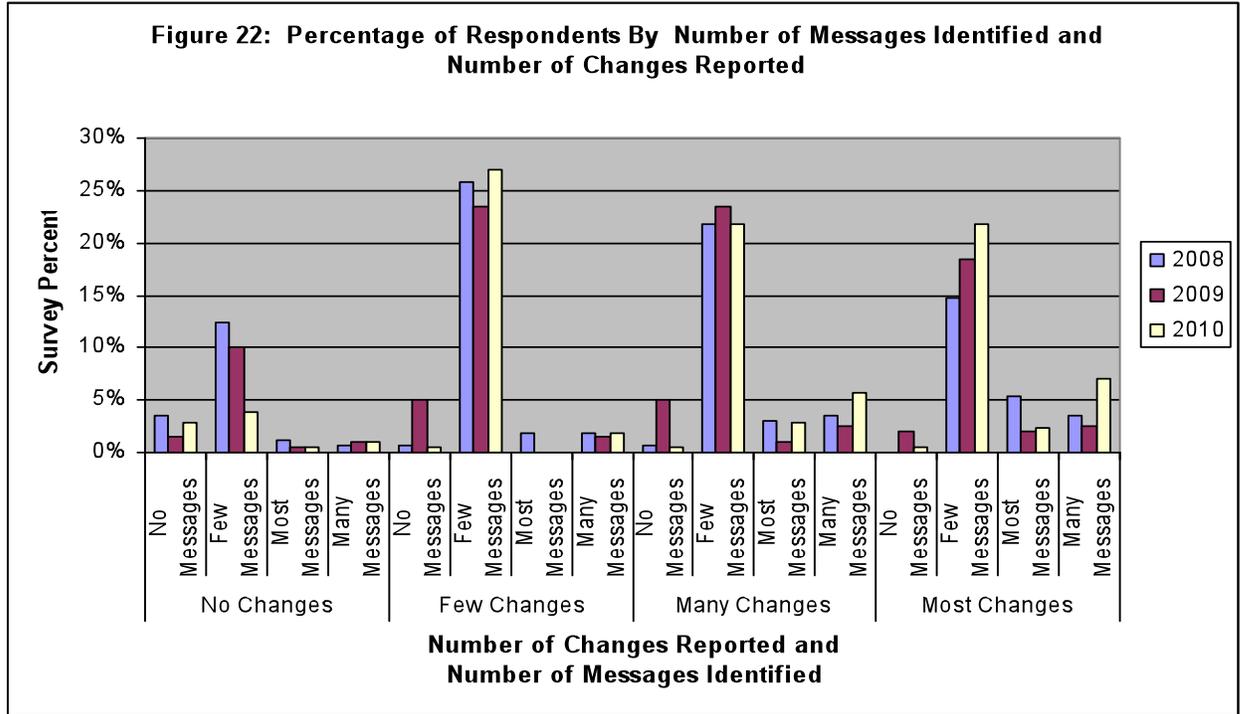
the choice of not marking these or saying they do these activities now when in fact, they already did them prior to hearing or seeing messages. The question clarity might be improved by providing the options of *Not Apply* and *Already Do* or *Never Did* (respectively) so that the survey responses can be clearly identified for respondent changes when such changes can be made.

Further examination of the data suggests that more respondents in 2009 and 2010 claim to have made at least one change as a result of local pollution messages than in 2008. Figure 21 shows that in 2010 only 8 percent of the respondents report no changes, while 29 percent report 1-3 changes, 31 percent report 4-7 changes, and 32 percent report 8-13 changes in the direction of the outreach messages. These data show that 92 percent of the respondents report changes in the direction of the outreach messages regarding BMPs for prevention of pollution.

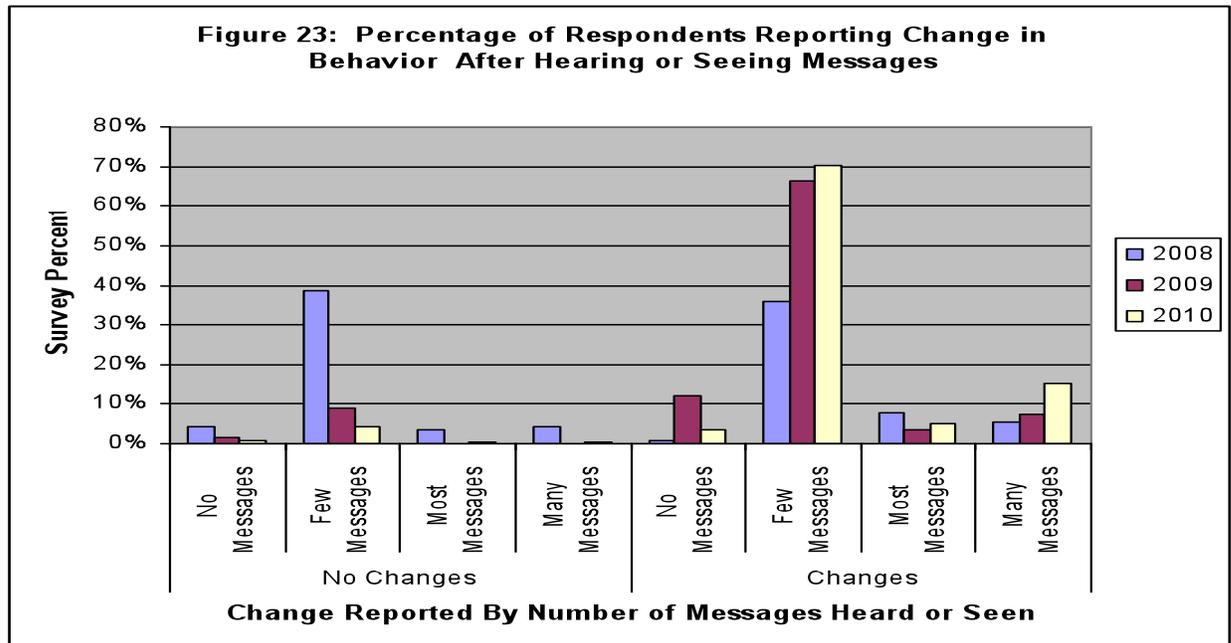


In a final examination of the veracity of the self-identified changes, Figures 22-24 show the strong relationship between exposure to outreach messages (2008 q10) (2009-2010 q6) and self-reported changes as a result of viewing those messages (2008 q13) (2009-2010 q7).

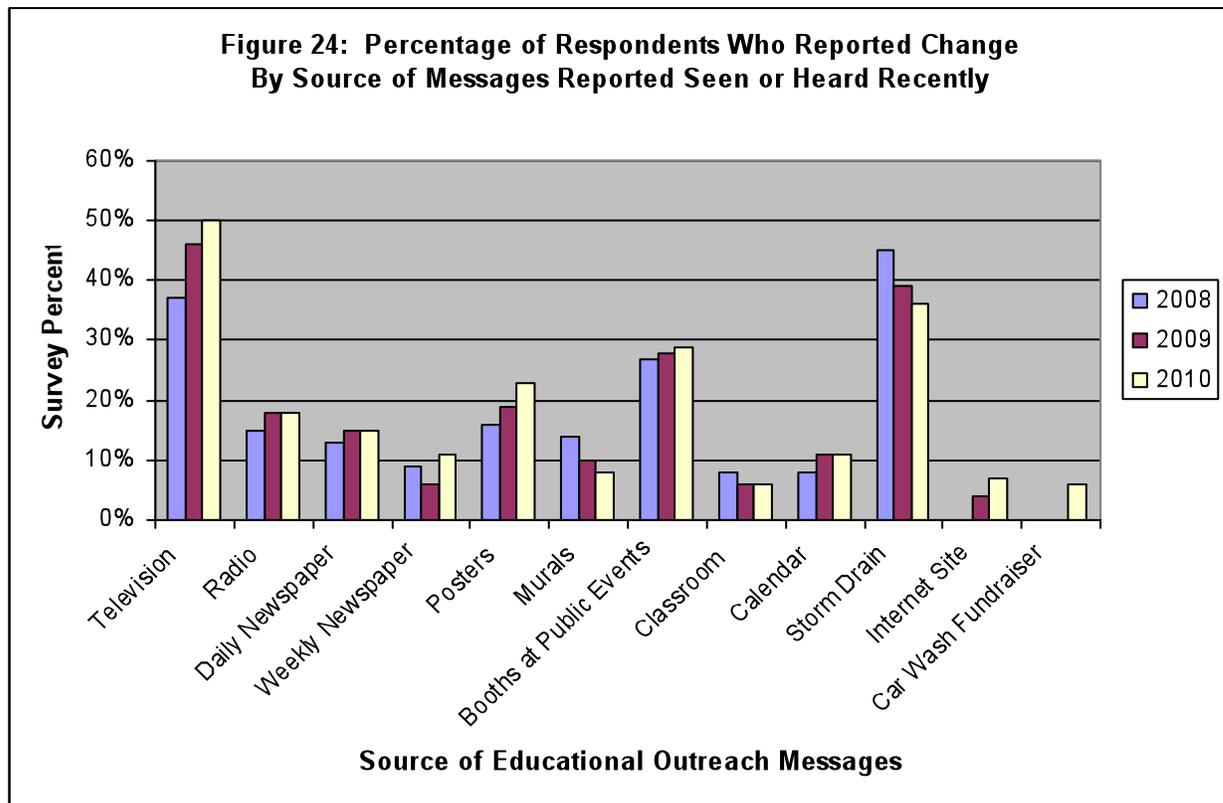
Figure 22 shows that 22-27 percent of those making 1-3 changes also identified 1-3 messages in 2010. The percentage of respondents making *Many* and *Most* changes after seeing or hearing *Many* or *Most* outreach messages increased in 2010 from levels in 2008 and 2009.



More specifically, according to the results in Figure 23, the percentage of respondents reporting making any changes at all increased from 40 percent from 2008 to 66 percent in 2009 to 70 percent for those respondents who identified only a few messages about protecting local creeks and streams. An impressive 91 percent of respondents made some kind of change as a result of seeing or hearing the EOP outreach messages.



More specifically and interestingly, among the types of messages heard or seen recently that are related to self-reported changes in behavior, the 2010 results in Figure 24 show increases in the percentage of respondents reporting having made at least one change and who also reported having recently seen or heard outreach messages on television, weekly newspapers, posters, public events, and Internet sites. Half of these respondents said they saw or heard television commercials, 29 percent identified booths at public events, and 23 percent identified posters as the source of outreach messages they seen or heard.



The storm drain markers, while showing a slight decrease, still exhibit a strong presence; of the respondents reporting having made changes, 36 percent identified having seen storm drain markers. Ironically, despite that no ads were placed in daily newspapers, it seems that local news coverage of the outreach activities at public events is associated with those respondents who self-reported making positive changes to BMPs. Interestingly, while ads were placed in the weekly newspapers, the messages accessed on the Internet site (7 percent) are almost as strongly related as the messages from the car wash fundraisers (6 percent) to those respondents who identified at least one change.

As noted earlier, the percentage of respondents having seen or heard any of the outreach messages may be depressed due to the inclusion of the word *recently* in the question. The question (q7) about changes the respondent made does not constrain respondents to their interpretation what is defined as *recent*; the question only limits the respondent to *within the past year*. Still, even that limitation may depress responses to murals and storm drain markers, which were placed in the community almost four years ago. As such, even given the possibility that the data may be a bit depressed due to time

context ambiguities, the data in Figure 24 strongly supports the assertion that educational outreach activities are associated with not only increased public knowledge (Figures 14-17), but also with positive behavioral changes embracing the BMPs promoted by these messages, particularly those involving television commercials and booths at public events.

CONCLUSION

The purpose of the *2010 Storm Water Management Public Knowledge Survey* was to provide an indicator of the veracity and durability of current and past educational outreach efforts for promoting best management practices for the prevention of urban runoff pollution. Although the results cannot be compared to 2005 and 2007 cross-sectional survey results, analysis of the 2008, 2009, and 2010 convenience survey results validates the conclusion from those studies that the educational outreach program has been highly efficient and effective in increasing the Chico community's knowledge base and support for best management practices for reducing and preventing urban run-off pollution of local waterways.

A comparative of the 2008, 2009, and 2010 survey data suggest the educational outreach program has been and continues to be highly effective in improving awareness, increasing knowledge, and changing behavior consistent with best management practices for preventing pollution of waterways through the storm drain system from household, yard, and garden runoff. In particular, the data indicate a strong relationship between knowledge of causes of local creek pollution and exposure to past or current outreach activities. The 2010 survey results strongly support the effectiveness of timely outreach message placement, particularly through television commercials and booths at public events, as mediums for not only enhancing public knowledge about the causes of local waterway pollution, but also for stimulating changes in behavior that embrace best management practices for handling materials that contribute to water pollution through urban run-off.

While the survey provides an indication of the veracity of the outreach results, there are a few ways it can be improved for future monitoring. First, questions regarding issues particular to housing with yards, to owning pets, to having vehicles, parenting status, etc should include a response option of "*I already do this*" This should help distinguish between respondents who have the opportunity to utilize BMPs and those for whom the issues are irrelevant.

Second, questions about outreach messages should give respondents a clear time period as well as an opportunity to acknowledge seeing or hearing the messages outside the time period. Given that some of the public art (murals and posters) and storm drain markers have been fixtures within the community for over four years, it is reasonable that some outreach messages may have had an impact prior to the current year's outreach program activities. Giving the respondent an opportunity to recognize current and past outreach messages allows for an examination of the longevity of those messages within the community.

Third, the question regarding where vehicles are washed (q5) should probably be a two-part question where the respondents are asked what method they use most, and then the respondents are asked if there is another method they use in addition. That change will provide the opportunity for determining what methods are predominate,

while satisfying the respondent's need for full disclosure of all the methods they use. Perhaps it might be helpful to also indicate if there is a reason why respondents do not wash cars on the lawn or car wash. It is possible that the survey is missing information about motivations for not using BMPs for car washing.

Finally, the modifications from 2008 to the 2009 survey format reduced the survey from two pages to one page by eliminating questions that could be confusing or perceived as redundant. This made the survey implementation easier; however, to create the suggested clarity in the question responses, such changes may lengthen the survey. Lengthening the survey not only increases the time it takes to fill-out the survey (thereby reducing its attractiveness to potential respondents) but also doubles the paper used to produce the survey. One way to solve both problems is to create a paperless survey through the use of e-surveys or web survey on netbook computers. Using a survey software program, such as *Survey Monkey*, set-up on two netbook computers secured to the booth table, respondents could take the survey on the computers. This change will not only eliminate the paper copy and improve survey efficiency, it will expand the effectiveness of the survey by solving the length problem given that the respondent will not see the length of the survey and the instrument will not be constrained by the size of one 8.5 by 11 inch page. Eliminating the paper copy is also a more appropriately environmentally friendly approach to surveying by reducing reliance on paper for gathering the data. To ensure an accessible survey tool, a number of paper copies can be held in reserve for individuals who are not interested in taking the survey using the computer, or for possible computer glitches that can and do occur with all computers and software programs at one time or another.

In addition and as complementary, the primary benefits of using survey software can provide a variety of secondary benefits to enhance the quality of the data collected. First, using an e-survey will reduce recording errors due to respondents selecting more than one response when only one is expected. In addition to being more environmentally friendly, the e-survey will also reduce data entry errors which often occur in hand-entered data. If desired, an e-survey can also be used to expand the survey field from public events such as fairs and shows, to those who visit the website or experience the messages in other media forums. For fair or show attendees too busy to stop and take the survey, the survey can be sent electronically to a PDA, iPhone, or email address. Further, the survey could be launched at different times and the public could be encouraged in outreach messages to take the survey. Most web or e-survey software contains a confirmation response; to induce potential respondents to take the survey, coupon give-aways from local commercial vendors could be provided upon completion of the survey in that confirmation response. Finally, the web or e-survey can be produced in several languages; notably it is necessary to have the survey in English, but having the survey available in Spanish will diversify the respondents and be more reflective of the Chico population.

In sum, the 2010 survey, confirms the veracity and durability of the educational outreach activities by showing clear and convincing evidence that the activities impact knowledge, awareness, and behavior of those respondents exposed to these messages. The data also indicate a strong relationship between exposure to past or current outreach activities and self-reported changes in handling of household, yard, and garden waste. In particular, highly visual outreach activities, particularly television commercials, booths at

public events, and storm drain markers are independently associated with knowledge and awareness of runoff issues. (see Appendices for Convenience Survey 2010 Report: IMPACT OF STORMWATER MANAGEMENT EDUCATION AND OUTREACH PROGRAMS, by Dr. Diane E. Schmidt, in Appendix E)

Evaluation

The 2010 convenience survey indicates that the SWM EOP messages are reaching growing numbers of the public. The data show that there was an increase in the percentage of respondents reporting having made at least one change in behavior using best management practices to keep waterways clean, and who also reported having recently seen or heard outreach messages.

There is a notable increase in the percentage of respondents who can identify *Few* and *Many* causes [of creek pollution] in 2010. Given that all these causes of creek pollution were direct and indirect targets of a variety of outreach messages, particularly of the television and radio media “blasts” just prior to administering the survey, the results suggest that the outreach messages have been, and continue to be, important educational and knowledge building tools in the community. (Schmidt, 2010 Convenience SWM EOP Survey Report).

The purpose of the 2010 Storm Water Management Public Knowledge Survey was to provide an indicator of the veracity and durability of current and past educational outreach efforts for promoting best management practices for the prevention of urban runoff pollution. ...Analysis of the 2008, 2009, and 2010 convenience survey results validates the conclusion from those studies that the educational outreach program has been highly efficient and effective in increasing the Chico community’s knowledge base and support for best management practices for reducing and preventing urban run-off pollution of local waterways. (Schmidt, 2010 Convenience SWM EOP Survey Report).

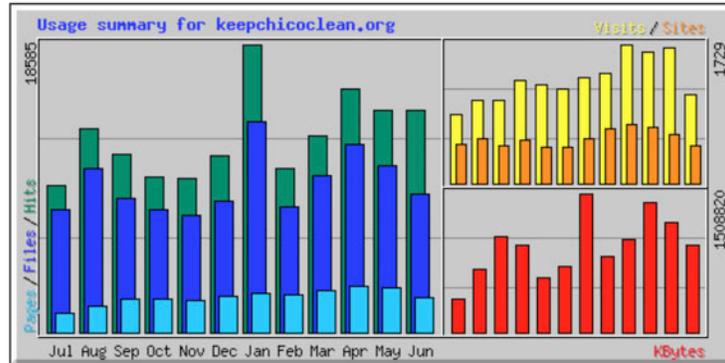
The 2010 survey results strongly support the effectiveness of timely outreach message placement, particularly through television commercials and booths at public events, as mediums for not only enhancing public knowledge about the causes of local waterway pollution, but also for stimulating changes in behavior that embrace best management practices for handling materials that contribute to water pollution through urban run-off (Schmidt, 2010 Convenience SWM EOP Survey Report).

Other methods of program evaluation have been employed in addition to survey results. Website traffic for www.keepchicoclean.org has been tracked and evaluated in correlation with media blast messages.

SWM EOP Website

Usage Statistics for keepchicoclean.org

Summary Period: Last 12 Months
Generated 27-Jun-2010 04:44 PDT



Summary by Month										
Month	Daily Avg				Monthly Totals					
	Hits	Files	Pages	Visits	Sites	KBytes	Visits	Pages	Files	Hits
Jun 2010	530	329	83	40	459	939629	1100	2246	8885	14330
May 2010	462	347	91	54	612	1189847	1679	2845	10787	14326
Apr 2010	524	403	99	54	691	1414021	1634	2979	12105	15732
Mar 2010	408	326	87	55	739	1010445	1729	2724	10110	12661
Feb 2010	378	290	87	49	674	824976	1374	2461	8131	10594
Jan 2010	599	437	81	42	559	1508820	1316	2521	13564	18585
Dec 2009	366	272	74	38	450	715552	1182	2321	8456	11366
Nov 2009	332	252	70	41	449	597089	1230	2105	7563	9977
Oct 2009	322	254	70	41	533	951176	1287	2195	7900	10000
Sep 2009	382	288	70	34	466	1037165	1030	2120	8640	11465
Aug 2009	423	342	54	33	556	678527	1033	1681	10613	13132
Jul 2009	304	254	40	27	491	369225	851	1247	7896	9446
Totals						11236472	15445	27445	114650	151614

The trend over the course of the 2009-2010 shows a consistent increase from 08-09. The website received a total of 15,445 visits from 07/09 to 06/10, which is more than double last year's statistic of 7,078 total visits. Peak viewership occurred during January, April and May 2010. This indicates that the Clean Creeks Calendar, which was distributed in January 2010, was an excellent outreach tool for directing viewers to the website for more in-depth information. The usage statistics also indicate that the multimedia "blast" reached the public and directed people to the website through radio, TV, newspaper, and booth, as the peak usage period coincides with the outreach message broadcasts, print dates and booth outreach events in April and May 2010. The website shows high public use, and has proved to be a successful method for disseminating

information on Best Management Practices, access to Creek Watch Hotline information, contact information for Clean Water Business partners, links to other educational websites, and access to the Big Chico Creek Watershed Alliance Citizen Monitoring Program.

Creek Watch Hotline

The number of calls to the Creek Watch Hotline in 2010 decreased by at least half in comparison to 2009 call numbers. This may be due to more and more people finding this type of information online, rather than by telephone. The website use doubled from 2009 to 2010, which indicates this may be the case. This downward trend indicates the importance of keeping the Creek Watch Hotline information posted online.

Clean Water Business Partner Feedback

A feedback survey was distributed to 2010 renewing CWBPs. Fourteen CWBPs returned completed surveys. (see Appendix D)

2010 Clean Water Business Partner Survey

Share your ideas and program feedback! Please take a moment to answer the following questions, for the improvement of the Clean Water Business Partnership Program (CWBP).

1. Has your business used the program logo in any advertising or promotional activities?
2. Would you prefer to have the logo made available to you in print form, rather than digital form?
3. Do you receive inquiries from the public and potential customers due to your status as a CWBP?
4. Which outreach media provides the most effective promotion for your business? (e.g. TV commercials, Radio commercials, print media, website, etc.)
5. How can the CWBP program better support your Clean Water business?

Thank you for your commitment to local healthy creeks and streams! We look forward to your feedback.

Five out the fourteen businesses expressed that they do receive inquiries from the public as result of their participation in the CWBP program. A few businesses requested that their company slogan be included on the www.keepchicoclean.org CWBP webpage. As a result the website redesign includes CWBP logos and slogans. Four out of eleven businesses stated that the Internet is the most effective form of advertising; two others listed TV and Radio; and two listed print media.

Clean Creeks in the Classroom

Among the evaluation tools used for the Clean Creeks in the Classrooms are: Pre-Post brainstorming with students, application of knowledge by students, observation of staff and volunteers, feedback from students and teachers.

Staff and Volunteers observe that students gain:

- Awareness of their own local watershed
- Knowledge of common pollutants that enter waterways through storm drain system
- First-hand knowledge of how a healthy riparian zone helps maintain clean and healthy water ways locally
- Vocabulary of watershed terms and run-off pollution prevention terms
- Ability to identify BMPs, or behaviors, that they as individuals and their family members can adopt to prevent pollution in local storm water drainage system.
- Self-identity that includes “steward” of local waterways

Classroom and Field Day Evaluation Measurements:

- Pre-post brainstorming sessions
- Creation of songs and chants incorporating new knowledge
- Design of t-shirts with educational messages, which are then worn by the students, giving them the opportunity to inform the public.
- Listing or naming behaviors that are BMP's;
- Students identify themselves as stewards (stewardship cheer).

A strong indicator of student and classroom success for the 2009-2010 *Clean Creeks in the Classroom Program* was high teacher/student demand for the program. Eighteen classes were served in 09-10, an increase from fifteen in 08-09. There is now a waiting list for the program for 2010-2011. There were requests by all participating schools to return next season.

Recommendations

1. After meeting with Chico Unified School District (CUSD) appropriate staff, to plan for Car Wash Fundraiser outreach in the 10-11 school year, to school affiliated charity car wash groups, it is recommended that training sessions be provided to middle and high school ASB Club Officers and Advisors. These training sessions would address how to conduct Clean-Water or Eco-friendly car wash fundraisers. Resources provided through the City's website, www.keepchicoclean.org, can be shared at the presentations, thereby providing the tools for the ASB Clubs to provide their own trainings for all future car wash fundraiser leaders.
2. In regards to Car Wash Fundraiser Outreach, the development of an "Eco-friendly Car Wash" poster is recommended. Charity car wash groups that implement BMPs at their car wash events can display the poster.
3. SWM EOP Clean Creeks in the Classroom curriculum was developed for 3rd grade level students. However, CUSD administration has requested that the curriculum be modified to meet 5th grade level California State Education Standards, as this better meets the state's education requirements. It is recommended that the Clean Creeks in the Classroom curriculum be modified to include 5th grade level content, and that the program serves 5th grade students and their teachers in the 2010-2011 school year.
6. The Consultant recommends the translation of appropriate outreach materials (e.g. brochures and posters) into Spanish and Hmong. After receiving feedback from PIC that access to educational materials in Spanish and Hmong would be helpful in providing training for limited English-speaking employees, for the prevention of pollution of waterways through the storm drain system, it is recommended that select materials be made available online in Spanish and Hmong.
7. It is recommended that an evaluation form be developed for participating classroom teachers to fill out upon completion of the program for their class. Upon approval of the evaluation form by City staff, the teacher responses could be collected and used for feedback on program improvements. In addition, responses could be incorporated into the annual program evaluation report.
8. The 2010 survey results indicate a need for educational outreach specific to proper disposal of lawn clippings and other green waste. It is recommended that a poster or flier is developed that addresses lawn and garden care BMPs and is disseminated at the 2011 Home & Garden Show.

9. 2010 Survey and Data Collection

It is suggested that SWM EOP create a paperless survey through the use of e-surveys or web survey on laptops. Using a survey software program, such as *Survey Monkey*, set-up on a mini-laptops secured to the booth table, respondents could take the survey on the computers, eliminating the paper copy as well as solving the length problem (they will not see the length). To ensure an accessible survey tool, a number of paper copies can be held in reserve for individuals who are not interested in taking the survey using the computer, or for possible computer glitches that can and do occur with all computers and software programs at one time or another.

As complementary these benefits, using survey software can provide variety secondary benefits to enhance the quality of the data collected. First, using an e-survey will reduce recording errors due to respondents selecting more than one response when only one is expected. In addition to being more environmentally friendly, the e-survey will also reduce data entry errors which often occur in hand-entered data. If desired, an e-survey can also be used to expand the survey field from public events such as fairs and shows, to those who visit the website or experience the messages in other media forums. For fair or show attendees too busy to stop and take the survey, the survey can be sent electronically to a PDA, iPhone, or email address. Further, the survey could be launched at different times and the public could be encouraged in outreach messages to take the survey. Most web or e-survey software contains a confirmation response; to induce potential respondents to take the survey, coupon give-aways from local commercial vendors could be provided upon completion of the survey in that confirmation response. Finally, the web or e-survey can be produced in several languages; notably it is necessary to have the survey in English, but having the survey available in Spanish will diversify the respondents and be more reflective of the Chico population.

The following revisions are suggested by Dr. Diane Schmidt for the survey tool:

First, questions regarding issues particular to housing with yards, to owning pets, to having vehicles, parenting status, etc should include a response option of "I already do this." This should help distinguish between respondents who have the opportunity to utilize BMPs and those for whom the issues are irrelevant.

Second, questions about outreach messages should give respondents a clear time period as well as an opportunity to acknowledge seeing or hearing the messages outside the time period. Given that some of the public art (murals and posters) and storm drain markers have been fixtures within the community for over four years, it is reasonable that some outreach messages may have had an impact prior to the current year's outreach program activities. Giving the respondent an opportunity to recognize current and past outreach messages allows for an examination of the longevity of those messages within the community.

Third, the question regarding where vehicles are washed (q5) should probably be a two-part question where the respondents are asked what method they use most, and then the respondents are asked if there is another method they use in addition. That change will provide the opportunity for determining what methods are predominate, while satisfying the respondent's need for full disclosure of all the methods they use. Perhaps it might be helpful to also indicate if there is a reason why respondents do not wash cars on the lawn or car wash. It is possible that the survey is missing information about motivations for not using BMPs for car washing