

# **Urban Stormwater Pollution: An Evaluation of Public Education Programs in Alameda County**

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## **Abstract**

The goal of environmental education programs is to develop environmentally responsible and active citizens. Evaluating these programs gives local agencies, schools, environmentalists, and educators information on what aspects of the program help or hinder participants from achieving the desired outcome. Organizations implementing the programs can then identify and change major features of the programs in order to achieve their objectives. This study evaluated public education programs in Alameda County, addressing urban stormwater pollution. Ten organizations implementing outreach programs were researched to perform this evaluation. The assessment identifies key factors of the programs that affect the outcomes. The factors include whether the organization is a government or non-profit organization, the staff to volunteer ratio, the target audience, the funding, and the types of mechanisms used for outreach. Data was collected through interviews and reviewing information in written records. This study shows the differences between factors of the education programs and their effects on implementation.

## **Introduction**

Most of the United States population lives in urban areas, near water resources. Much of the land people live on is covered with impervious surfaces such as roads, parking lots and buildings. People's daily activities cover these surfaces with a variety of pollutants. Some activities that indirectly degrade water include driving a car, landscaping practices, and improper disposal of waste. Excess nutrients, pathogens, heavy metals, organic chemicals, organic waste, sediments, and salts are pollutants from human activities in urban areas. The pollutants from vehicles come from fluids, exhaust, the deterioration of vehicle parts, such as brake pads and tires, and washing cars in driveways. It is common to trace landscaping chemicals in polluted water because most people overuse or improperly use fertilizers, pesticides, and herbicides on landscapes in residential homes, golf courses, or parks. In addition, waste material such as pet waste, grass clippings, and litter are sources of bacteria, biochemical oxygen demands, and chemicals.

Water pollutants are categorized as emitted from point or non-point sources. Point sources are distinct and confined, such as pipes from industrial or municipal sites that empty into streams or rivers. Non-point sources, such as runoff, are diffuse and come from urban or rural areas. Diffuse forms of pollution are now the nation's leading threat to water quality. Urban runoff alone ranks as the second most common source of water pollution for lakes and estuaries nationwide, and the third most common source for rivers (Chester 1996). Urban stormwater pollution continues to impair the nation's waterways, in spite of the passage of the Clean Water Act of 1972. This is a result of runoff water picking up pollutants when it rains, or when impervious surfaces are washed down. The storm sewer system then collects urban runoff and discharges it directly to the nearest river, lake, or bay without any treatment (Coburn 1994). Many people are not aware that the water in the stormdrains is not treated, as opposed to the water in sewage drains. This leads to direct pollution, which is when people dump chemicals straight down stormdrains. Indirect pollution is when pollutants are picked up by runoff and deposited into stormdrains (Jeung 1978).

Since urban runoff originates from a variety of non-point sources, it is a difficult problem to monitor and control. Management programs and conservation techniques on

undeveloped land, such as preserving floodplains, wetlands, and stabilizing stream banks and slopes, control the pollutants in runoff. These natural features play important roles in managing non-point pollution in local communities and should be included in any management program (Terrene Institute 1994). However, since non-point source pollution is related to development and individual lifestyles of citizens, educating the public on preventing pollution themselves is an integral part in the control of urban stormwater pollution. Education leads to greater awareness and attitude change, which then improves environmental behavior (Zelenzy 1999). The goal of environmental education programs is to develop environmentally responsible and active citizens. Knowledge of the problem is a prerequisite to action. Yet, an individual must also be aware of what steps he can take to alter his lifestyle and should be encouraged by outreach programs to change his actions (Hines *et al.* 1986).

Around seven million people live around the San Francisco Bay and Delta. As urban population and activity continues to increase, the volume of contaminants entering creeks and the Bay also increases (NRDC 1999). Thus, it is necessary for people living around water resources to understand the effects of human actions upon water quality and take responsibility for their actions. One of the many goals of local government agencies and non-profit environmental organizations is to increase public education of urban stormwater issues. These organizations educate the public in a variety of ways, either by spreading information about urban runoff, conducting workshops for teachers, or by taking children on fieldtrips.

Evaluating education programs is necessary in order to improve the programs, develop new teaching strategies, and to allocate effectively limited capital resources. Evaluation data provides a basis to make informed and objective decisions about the needs and progress of programs in order to develop effective education (Norris and Jacobson 1998). Much of the evaluation of education programs focuses on measuring and discussing the attitudes and achievements of administrators, students, teachers, and individuals in a particular program (Morris and Fitz-Gibbon 1978). A study investigating household recycling behaviors used four sets of variables to classify recyclers from non-recyclers. The variables included the demographics of the residents, their knowledge of the recycling program, their perception of program policies and problems, and their

attitudes toward the environment. It was found that among potential recyclers, printed materials, such as editorials, brochures, posters, and newspapers were the most effective tools in increasing public awareness about recycling and other pro-environmental activities. Public service announcements, talk shows, community event calendars on radio and television are also appropriate information channels, particularly to areas of potential nonrecyclers (Lansana 1992).

While Lansana's study evaluated the individual, there have been studies done that evaluate curricula in programs. A study of solid waste curricula from programs around the country determined how effective each curriculum is in promoting behavior change with regard to solid waste. Eight variables that were thought to promote environmentally responsible behavior were used to perform the evaluation. The variables included: knowledge of strategies and the issue, skills, attitudes, locus of control, responsibility, sensitivity and social norms (Boerschig and De Young 1993). Although this study evaluates the programs rather than the individuals that are a part of the education programs, it judges the program effectiveness by looking at outcomes. However, the outcomes are assumed to be brought about by critical factors and processes that form the program. Few evaluation reports pay enough attention to describing program processes, which help or hinder participants from achieving a certain outcome.

Norris and Jacobson (1998) performed a study to understand the effectiveness of tropical conservation education programs as a conservation tool. One of their objectives was to investigate factors correlated with reported program success. These possible correlates included: geographic region in which the program took place, program sponsor, duration of the program, type of publication in which results were reported, and evaluation method (formative, summative, and long term). The use of formative or long-term evaluations and program longevity were correlated to program success. Other program attributes, such as, program location, publication type, program sponsor, and program longevity, were not correlated to program success. They stated that it is important to determine the contribution of evaluation approaches, as well as other program elements to the success of the programs. Once it is known how key factors of educational programs affect implementation, then changes can be made to enable programs to achieve their objectives (Morris and Fitz-Gibbon 1978).

The purpose of this project was to evaluate public education programs addressing urban stormwater pollution. I assessed programs implemented in Alameda County, based on critical features of the programs, including type of organization, funding, target audience, tools used for education, and the number of staff and volunteers employed. The hypothesis I tested is that the differences in critical features between public education programs affect implementation of the programs.

## **Methods**

This research focuses on organizations in Alameda County, addressing small-scale polluters in urban areas. The organizations researched include both government and non-profit organizations implementing urban runoff education programs. The four government organizations are the Environmental Protection Agency, East Bay Municipal Utility District (EBMUD), Alameda County Resource Conservation District and the Alameda County Clean Water Program (ACCWP). The remaining six organizations are non-profit organizations. These include: Estuary Action Challenge, Save San Francisco Bay, Urban Creeks Council, Friends of the San Francisco Estuary, Friends of Five Creeks, and Aquatic Outreach Institute.

The critical features or factors I looked at include the context of the program and tangible features which are mentioned in a program's plan. These include whether the organization is a government or non-profit organization, the target audience, and the mechanisms used for outreach. In addition, I evaluated features not specifically mentioned in the program's plan, but whose presence may be related to the program's success or failure. These factors include funding and the staff to volunteer ratio. For the target audience, I looked at the size of the audience and whether the programs are geared towards teachers, children, or adults in the general public. The size of the audience was determined by how many people the program actually reaches rather than the number of people the program aims to reach. I determined where most of the program's funding comes from, either from government funding or from private donations, and how much funding is received. The number of staff and volunteers doing work and conducting activities was recorded. In addition, the types of mechanisms used for outreach were

assessed. A list and a brief explanation of the different types of mechanisms used in environmental education programs are shown in Table 1.

<b>Mechanisms used for outreach</b>	<b>Examples</b>
Media	Press releases, articles, public service announcements, newsletters
Community events	Festivals, or county or city festivals where organizations set up booths
Awards	Recognizes good work, for young people, volunteers, sponsors
Meetings	Public gatherings to explain program or upcoming activities
Speaker's bureau	Communication on a specific topic, provides opportunities for questions and answers
Educational material	Brochures, posters, flyers, handouts, with information
Training	Provide skills needed to provoke behavior change Ex. Teaching proper use of herbicides
Technical/on-site Projects	Collecting information, identifying problems, finding solutions Ex. Citizen monitoring of creeks, identifying and tracking pollutants in creeks, storm drain stenciling, action projects

Table 1: Explanation of the different types of mechanisms used for outreach in environmental education programs (Terrene Institute 1994).

I collected my data by conducting interviews with employees from the organizations. The interviews were conducted over the telephone and were recorded by hand. The questions asked are shown in Appendix A and were based on the critical features of the programs I chose to consider. In addition, I reviewed information on record and written documentation containing information about the educational programs. I formulated questions to help analyze the data I collected.

- 1) Are there differences in factors between government and non-profit organizations?
- 2) How does the target audience relate to the mechanisms used in the program?
- 3) How does the target audience relate to the amount of funding received?
- 4) How does the types of mechanisms used relate to the amount of funding received?
- 5) How does the staff to volunteer ratio differ between government and non-profit organizations?

## Results

There are 29 educational programs implemented through the 10 organizations. The compiled interview results in Appendix B show general results for all the interview questions. Fifteen outreach programs have a target audience size of less than 20,000 people/year. Twelve programs receive less than \$50,000/ year. Eleven programs employ less than 10 staff members and seven programs have less than five volunteers that help. Out of the ten organizations interviewed, seven organizations are working to increase their outreach programs, while three believe that they have problems reaching their intended audience. All but one of the organizations believes that funding influences their audience size. Figures 1, 2 and 3 summarize additional results from the compiled interviews.

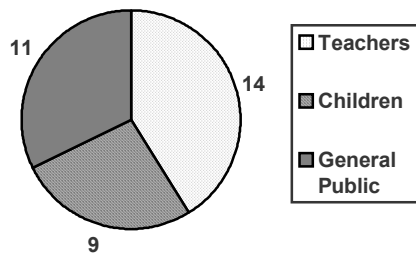


Figure 1: The proportion of programs addressing teachers, children, and the general public.

Figure one shows that there is not a huge discrepancy in the number of programs reaching teachers, children or the general public. The most amount of programs involve teachers the most, then the general public, and children the least.

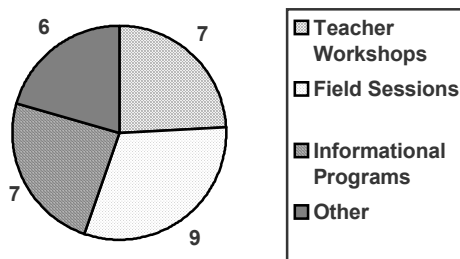


Figure 2: The proportion of outreach programs implemented based on type of program

Figure two shows that out of the 29 programs the different types of outreach programs are almost equally represented. There are slightly more programs that involve the target audience directly with the environment. The other programs involve classroom presentations, newsletters, or conferences.

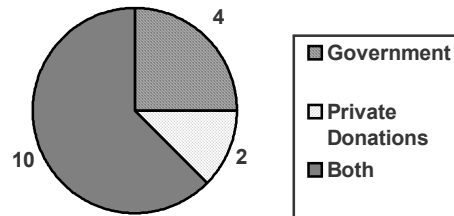


Figure 3: The proportion of programs receiving funding from government, private, or both types of sources.

This figure shows that both government and private sources fund most of the outreach programs. Only two programs rely solely on private sources of funding, while four receive government funding.

The detailed results of the interviews for the non-profit organizations can be seen in Tables C1 and C2 in Appendix C. The results for the government organizations are shown in Tables C3 and C4. These results only include question 1 and questions 3 through 9 from the interview questions.

The intended audience is more often the general public and teachers rather than children directly. The typical size of the target audience is mostly between 1-2,000 people per year in non-profit organizations. Government organizations tend to have a larger audience size. The EBMUD reaches a significantly larger audience compared to the others. They are able to reach around 600,000 people per year. Most organizations feel they do not have a problem reaching their intended audience, but about half of the organizations are working on increasing the number of people they reach.

Community events, training and technical projects are the most commonly used outreach mechanisms in non-profit programs. Educational material is the most widely used outreach tool for governmental organizations. Awards, meetings and speakers are



less often used in both types of organizations. Figure 4 shows the differences between the types of mechanisms used among government and non-profit organizations.

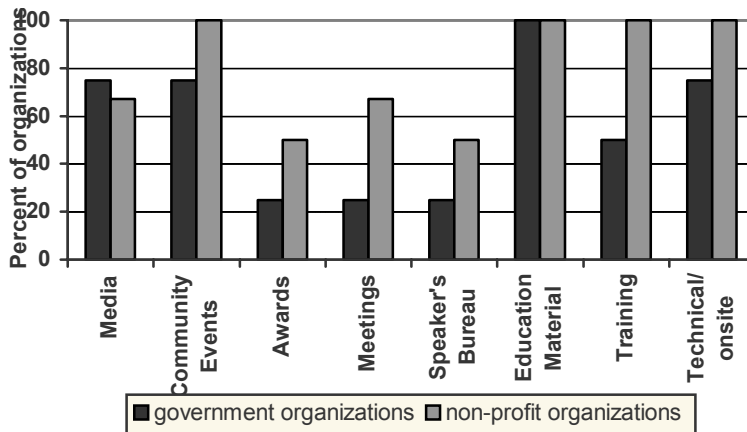


Figure 4: Percent of organizations implementing outreach mechanisms

All of the non-profit organizations use community events, educational material, training, and technical projects as outreach mechanisms. However, education material is the only tool used by all of the government organizations. The least used outreach mechanisms for both government and non-profit organizations are awards and speaker's bureaus. The employees of the educational programs had varying opinions on which mechanisms are the most effective in reaching their audience. The most effective mechanisms mentioned by Friends of the San Francisco Estuary, Estuary Action Challenge, and Save San Francisco Bay Association were the use of multiple modes, direct contact with the audience, and fieldwork, respectively. Educational material and media were the most effective in reaching audiences in government organizations, such as the EBMUD and the ACCWP.

More than half of the organizations receive less than \$50,000 per year in funding. On a cost per person basis, teachers have the highest amount of funding per teacher. In addition, much of the funding for teachers comes from government grants or funds rather than private funding. All of the organizations believe that the amount of funding

received influences the size of the audience. Figure 5 shows the relationship between amount of funding received and audience sizes.

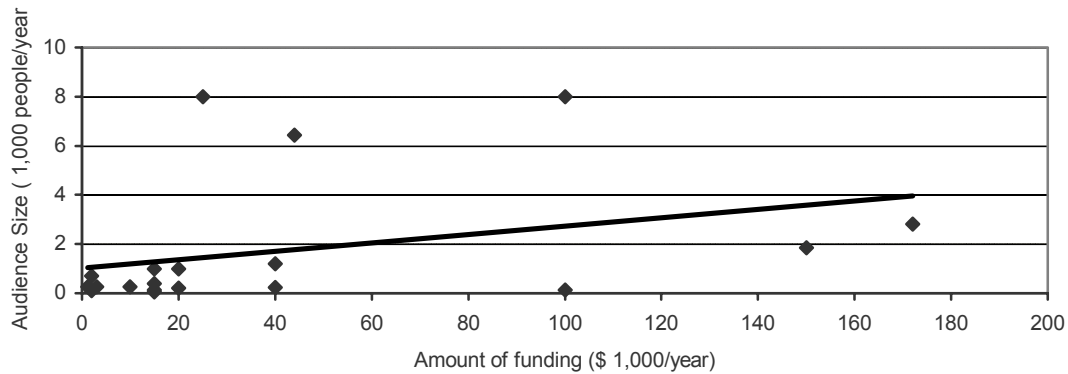


Figure 5: Relationship between funding and audience size (note: this figure leaves out EBMUD, which receives \$500,000/year to reach 60,000 people/year.)

The trend line shows that there is a positive relationship between the amount of funding received and audience size. The more funding a program receives, the more people it can educate.

Most of the non-profit organizations have between one to five staff members involved in the planning and carrying out of the programs. Two of the non-profit organizations believe that the staff to volunteer ratio for the educational programs influences the size of their audience.

## Discussion

Although all types of audiences are reached, programs directly for children are less common because once teachers are reached, they will in turn teach their students about being environmentally responsible for their actions. It also requires much more time and effort to reach children because to keep them interested in the issue the most effective outreach mechanisms are interactive activities, physically in the environment, rather than informational sources. This requires all day field trips, which are difficult to do when a child is in school. Reaching the general public is much easier because information is sent to the public through newsletters or sending educational brochures through mailing lists.

However, Zelenzy found that educational interventions were more effective among participants who were 18 years old or younger, perhaps due to a longer duration of the programs. In addition, compared with adults, younger people learn pro-environmental behavior more easily and they are more interested in environmental issues (Zelenzy 1999). Thus, more environmental educational programs should address children directly, at a younger age, to be more effective in changing behavior.

As seen in Figure 5, audience size correlates to the amount of funding received. Programs addressing the general public tend to have larger audience sizes compared to teacher workshops. This may be because the general population is much larger than the population of teachers, or it may relate to the tools needed to educate the different groups. Teacher workshops receive much of their funding from government sources. Although they receive the most funding on a per person basis, the cost of teacher workshops, making folders with educational material and lesson plans for every teacher, is expensive. Thus, most of the funding for the workshops goes towards making these folders for teachers. The programs addressing the general public receive less government funding than the workshops, because on a large scale it costs less to reach them.

All of the non-profit organizations implement training and on-site action projects. The most reasonable explanation for this is that people learn the most by physically being involved. In the case of urban runoff, people will receive more knowledge and change their behavior by stenciling storm drains, going to creeks, tracing where pollutants come from, and learning proper actions to take, rather than attending a meeting, or asking questions in a forum. Although, these mechanisms are useful, they are passive tools and do not allow an individual to take action.

Government organizations commonly use and believe that educational material and media are the most effective in reaching their audiences. This is because these mechanisms are the easiest and most cost effective way to reach a large number of people at once. However, with educational material people will gain knowledge and with training, people will learn the ways in which they can change behavior. Yet, by implementing technical and action projects, people will most likely change their behavior.

A previous study done by Harini Madhavan shows that both teachers and students believed that more outdoor activities and hands-on activities were needed to improve environmental education programs (Madhavan 1999). Zelenzy (1999) found that educational interventions that actively involved participants were more effective in improving environmental behavior than those that did not.

Although awards, speakers and meetings are the least implemented outreach mechanisms, rewarding people for their good work is a tool that could be used more by educational programs. Positive reinforcement is an effective way to encourage people to continue their actions. Amy Hutzal, from Save San Francisco Bay mentioned that they do not implement awards, yet it is a good idea to support the community for their good work (Hutzal 2000, pers. comm.)

Most of the organizations agree that volunteer involvement in the planning and implementation of the educational programs would allow them to reach more people. Yet, many of them have not worked on getting more volunteers involved because it is too difficult to find people who can spend the entire day helping out with a workshop or presentation. It is sometimes even too hard to get people even with a money incentive. Other organizations that believe funding and volunteer involvement would increase their audience size, are not working to increase their outreach program because they feel they would rather do a better job with the people they already reach. They believe that quality not quantity will lead to the most changes in the people's attitudes and actions in the environment.

This study has many limitations that may have affected the results. First, the overall size of the organization is not taken into consideration. Thus, it may not be effective to compare a small organization, such as Friends of Five Creeks to a larger organization such as the Save San Francisco Bay Association. Secondly, there may not have been enough organizations interviewed to produce accurate results. In addition, there should have been an equal number of government and non-profit organizations in the study. Thirdly, duration of the program, or frequency of the program should have been a factor to consider.

## **Conclusion**

This assessment shows how certain critical features of an education program affect the implementation of the program. By knowing how key factors are related, changes can be made to the programs in order to improve and strengthen environmental education in order to promote environmentally responsible behavior. This study shows that in order to reach a larger audience, more funding must be received or certain outreach mechanisms, such as educational material or media must be used to reach a greater number of people more easily. Yet, this may only include providing communities with knowledge and awareness of the problems. However, a more effective way of approaching outreach programs is to think in terms of quality, not quantity. More people will change behavior if they are taught proper behavior skills and if projects are directly involve the environment. Volunteer involvement is an aspect that should be encouraged, but is not necessary for the success of a program. In addition, children should be a priority in environmental education programs because they are the most willing to learn and they are the basis for future environmental decisions and actions.

## **Acknowledgements**

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## Appendix A

### Interview Questions for ES 196

Organization \_\_\_\_\_

Name of person interviewed \_\_\_\_\_

Date \_\_\_\_\_

1. What are the educational programs being implemented through your organization that deal with the issue of urban runoff?
  - Teacher Workshops
  - Field Sessions
  - Informational Programs
  - Other \_\_\_\_\_
  
2. Are any of these programs more popular than the others?
  - No
  - Yes
  - If yes, which ones? \_\_\_\_\_
  - Why do you think this might be?
  
3. Who is your intended audience for these programs (can be more than one answer)?
  - Teachers
  - Children
  - General Public
  - Other
  
4. What is the typical size of the audience that each program reaches?
  - \_\_\_\_\_ people / year
  
5. What types of outreach mechanisms or tools are used for outreach? (from list)
  - Media
  - Community Events
  - Awards
  - Meetings
  - Speaker's Bureau
  - Educational Material
  - Training
  - Technical/on-site projects
  - Other \_\_\_\_\_
  
6. Do the programs receive any funding? If so, how much?
  - \$ \_\_\_\_\_ /year

7. Where does this funding come from?
  - Government
  - Private Donations
  - Both
  - Other (in kind donations etc)\_\_\_\_\_
8. How many staff members are involved in planning and carrying out the educational programs? \_\_\_\_\_
9. How many volunteers are involved in planning and carrying out the educational programs? \_\_\_\_\_  
Staff: Volunteer ratio = \_\_\_\_\_
10. Do you have any problems reaching your intended audience?
  - No
  - Yes \_\_\_\_\_
11. Do you want to increase your outreach program?
  - No
  - Yes \_\_\_\_\_
12. Does the amount of funding received influence the type or size of your audience?
  - No
  - Yes \_\_\_\_\_
13. Does the staff to volunteer ratio of your organization influence the type or size of your audience?
  - No
  - Yes \_\_\_\_\_
14. Which types of mechanisms used for outreach are the most effective in reaching your audience? Why?
15. Have you tried using the other methods?
  - No
  - Yes \_\_\_\_\_
16. What problems do the other methods have?



## Appendix B

Note: The numbers by the categories show how many programs fit into that category

1. What are the educational programs being implemented through your organization that

address the issue of urban runoff?

Teacher Workshops	7
Field Sessions	9
Informational Programs	7
Other	6
Presentations	3
Newsletter	2
Conference	1

2. Are any of these programs more popular than others?

No 10

Yes

"If yes, which ones?"

Why do you think this might be?

3. Who is your intended audience for these programs (can be more than one answer)?

Teachers	14
Children	9
General Public	11
Other	1-city, county, specific occupation

4. What is the typical size of the audience that each program reaches? (People/year)?

1-2,000	15	2,100- 4,000	1
4,100-6,000	0	6,100-8,000	4
Over 8,000	1		

5. Which types of outreach mechanisms or tools are used for outreach? (from list)

Media	7	Community events	9
Awards	4	Meetings	5
Speaker's Bureau	4	Educational material	10
Training	8	Technical/on-site projects	9
Other	3-classroom presentations		

6. Do the programs receive funding? If so, how much per year?

None	0	\$1-\$50,000	12
\$51,000-\$100,000	4	\$101,000-\$150,000	1
\$151,000-\$200,000	1	Over \$200,000	1

7. Where does this funding come from?

Government	4	Private Donations	2
Both	10	Other	1 monthly fee (EBMUD)

8. How many staff members are involved in planning and carrying out the educational programs?

None		one-five	6
six-ten	5	ten-fifteen	1
over 15	1		

9. How many volunteers are involved in planning and carrying out the educational programs?

None	5	one-five	2
six-ten	0	ten-fifteen	0
over 15	4		

10. Do you have any problems reaching your intended audience?

No	7	Yes	3
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11. Are you working to increase your outreach program?

No	3	Yes	7
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12. Does the amount of funding received influence the type or size of your audience?

No	1	Yes, size	9
		size and type	1

13. Does the staff to volunteer ratio of your organization influence the type or size of your audience?

No	6	Yes	4
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14. Which types of mechanisms used for outreach are the most effective in reaching your audience? Why?

- 2 classroom presentations- uses all senses, visual, verbal, hands-on
- 3 Education material and media- can get to a large number of people
- 1 multiple modes-seeing the information in a variety of ways- workshops, videos,
- 2 training-leads to knowledge of behavior change
- 2 technical/on-site- direct contact with the environment, allows people to take action

15. Have you tried using other outreach methods?

No	7	Yes	3
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16. What problems do other methods have?

- training- other programs are already doing it (ex. AOI)
- meetings-gets people together, but does not educate
- media, meetings, speakers- won't benefit children
- billboards (EBMUD)- does not provide specific info. General statement about water quality

Appendix C

	<b>Staff v. Volunteer</b>	<b>Type of Audience</b>	<b>Size of Audience</b>	<b>Type of Funding</b>	<b>Amount of Funding</b>
<b>Aquatic Outreach Institute</b> Teachers Workshops (4)	6:0	Teachers	30 teachers/workshop (130 teachers/year)	Primarily government	\$60,000/year
Watershed Awareness Program (Friends of Sausal & San Leandro Creek)		General Public	1,200 people	Government and donations	\$40,000/year (\$20,000 from gov.)
Teachers Conference		Teachers	200 people/year	Government and donations	\$20,000/year
Bay Area Citizens for Creek Restoration		General public	250 people/year	Primarily donations	\$3,000/year
<b>Friends of Five Creeks</b>		General Public	250 people	Government and donations	\$1,200 from gov.
<b>Estuary Action Challenge</b> (5 programs)	4:25	Teachers and children	30 students/ teacher (1,800students/60 teachers per year)	Primarily private donations	\$150,000/year
<b>Friends of the SF Estuary</b> Teacher Workshops	30:4	teachers	120/year	Grants	\$100,000/year
Creek Keepers		children	1,000/year	Grants	\$15,000/year
Erosion Control		Construction workers, city and county members	240/year	Grants and sale of materials	\$30,000-\$50,000/year
Newsletter		General public	8,000/year	Grants	\$25,000/year
<b>Urban Creeks Council</b>	6:20	Teachers, children, General public	50 teacher training 250 protection and restoration 1,000 presentations	Both	\$20,000 presentations \$10,000 rest. /prot. \$15,000 training workshops
<b>Save SF Bay Association</b> Watershed Education Program	4:4	Children and teachers	2,500 children/year 300 teachers/year	Half gov. and half private	\$172,000/year
Seafood Consumption Information Project	1:4	Adults (anglers)	300-500 adults	Government	\$15,000/year

Table C1: Selected factors for non-profit organizations (Note: the organizations are in bold type and if applicable, the separate education programs are underneath)

	Media	Community Events	Awards	Meetings	Speaker's Bureau	Educational Material	Training	Technical/on-site projects
Aquatic Outreach Institute	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Friends of Five Creeks	No	Yes	No	Yes	Yes	Yes	Yes	Yes
Estuary Action Challenge (5 programs)	No	Yes	Yes	No	Yes	Yes	Yes	Yes
Friends of the SF Estuary	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Urban Creeks Council	Yes	Yes	No	No	No	Yes	Yes	Yes
Save SF Bay Association	Yes	Yes	No	Yes	No	Yes	Yes	Yes

Table C2: Types of mechanisms used by non-profit organizations

	Staff v. Volunteer	Type of Audience	Size of Audience	Type of Funding	Amount of Funding
Environmental Protection Agency Volunteer Monitoring	7:0	General public	100 people/ year	Both	\$2,000/year
Surf Your Watershed	10:0	General public	700 people/year	Both	\$2,000/year
East Bay Municipal Utility District	4:0	General public	60,000/year	Monthly fee from water bill payers	\$500,000/year
Alameda County Resource Conservation District San Francisco Bay Savers	5:0	Children and teachers (fourth grade)	6,400 children/year 32 teachers/year	government	\$44,000/year
Alameda County Clean Water Program	22:0	General Public	8,000/year	EPA grants and tax money	\$100,000/year

Table C3: Selected factors for government organizations

	Media	Community Events	Awards	Meetings	Speaker's Bureau	Educational Material	Training	Technical/on-site projects
Environmental Protection Agency	Yes	Yes	Yes	No	No	Yes	Yes	Yes
East Bay Municipal Utility District	No	No	No	No	No	Yes	No	No
Alameda County Resource Conservation District	Yes	Yes	No	No	No	Yes	No	Yes
Alameda County Clean Water Program	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes

Table C4: Types of mechanisms used by government organizations