

*A Report on the*  
**CHICO URBAN STREAMS ALLIANCE**  
*CLEAN CREEKS PROJECT*  
**URBAN RUNOFF POLLUTION**  
**PUBLIC KNOWLEDGE SURVEY**

**Prepared for the Chico Urban Streams Alliance**  
The City of Chico; Butte Environmental Council;  
Big Chico Creek Watershed Alliance; Kennedy/Jenks Consultants  
**Chico, California**

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## ***Introduction***

The Chico Urban Streams Alliance (Chico USA), engaged its partner, the Butte Environmental Council (BEC) to conduct research on the public knowledge of Chico area residents on local water quality/urban runoff pollution issues. BEC worked with its Chico USA partners (City of Chico, Big Chico Creek Watershed Alliance, and Kennedy/Jenks Consultants), the California Regional Water Quality Control Board (CRWQCB), and California Bay-Delta Program (CALFED) to determine local runoff pollution issues that needed to be addressed in the study. The following is a report of findings from the telephone survey of a sample of residents in the greater area of Chico, Forest Ranch and Cohasset areas.

## *Acknowledgements*

**The Chico Urban Streams Alliance thanks the following people and organizations for their invaluable contributions to the study:**

**Barbara Vlamis**, Executive Director, Butte Environmental Council, for her expertise in local water quality issues.

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**Diane Schmidt**, Public Policy Professor, California State University, Chico for her participation in the study through providing extra credit for her public policy students to conduct the survey interviews and complete data entry. Her expert teaching methods allowed her to see the value of student participation in a professional research project. All participating students received training on all aspects of the study, extra credit points in Diane Schmidt's public policy classes, and a copy of the final report for their portfolios.

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## *Methodology*

A three-step development process was followed for the study:

- 1. BEC conducted a review of urban runoff pollution studies** conducted by cities and counties around the United States that focused on public knowledge/awareness of urban runoff pollution issues. **This review identified content and question structure on runoff pollution issues and concerns.**
- 2. BEC worked with James Gregg, James Fletcher, the Chico USA partners, the CRWQCB, and CALFED to develop urban runoff pollution topics and questions that are relevant to the Chico area.**
- 3. The results of the review and consultation meetings were used to develop a telephone questionnaire that was focused on urban runoff pollution issues in the Chico, Cohasset and Forest Ranch areas** (see Appendix A). 10 Pre-test surveys were conducted by Phil Midling, a professional survey administrator, referred to BEC through the Program for Applied Research and Evaluation at California State University, Chico. The questionnaire was then refined with his suggestions. This questionnaire was utilized to survey 350 randomly selected adults age 18 and older living in the Chico, Cohasset and Forest Ranch areas. These adults were selected through random digit dialing (RDD) to assure that every household with a telephone (about 95% in Chico, Cohasset and Forest Ranch) had an equal chance of being selected for participation in the survey. Thus, **a probability sample of 350 adults was interviewed by telephone.** This sample size has a sampling error of +/-5.34% with 95% confidence. In other words, we are 95% sure that the sample for each area represents the opinions of all adults living in the region within +/-5.34%.

In addition to standard demographics, public knowledge questions included in the survey addressed the following topics:

- Urban runoff pollution in the Chico area, and its effects on local creeks and streams.
- Protection of water quality
- Use of environmentally friendly products

and the following opinion topics:

- Public opinion of the importance of environmental advocacy and education organizations
- Public willingness to pay for local water quality protection

and questions regarding:

- Where the public obtains information on local environmental issues and home maintenance.

The following is a report of findings from the telephone survey. These findings are presented for the Chico, Cohasset, and Forest Ranch areas. *The data is combined to provide findings for the three areas as a whole.*

## Telephone Data Collection

Telephone data collection for the public knowledge of urban runoff pollution study was begun on September 6, 2005, and was completed on September 15, 2005. A random sample of household telephone numbers for the Chico, Cohasset and Forest Ranch areas was purchased from Survey Sampling, Inc. (SSI) of Fairfield, Connecticut. SSI is the world's largest company specialized in survey sampling.

### **A total of 350 interviews were completed for the survey.**

A total of 2,822 phone numbers were called during the study period. Up to three (3) attempts were made to reach each phone number and to complete an interview. The numbers were called during several evening periods on weekdays to increase the probability of reaching a respondent. For example, each phone number was called during the evening hours of 6 to 9 PM on weekdays. Production statistics for the survey are presented below.

- **Never Answered:** On every call the number was not answered after 5 rings or the caller received a busy signal. Thus, it is not possible to determine if the number belongs to a qualified household.
- **Answering Machine:** The only contact made was to an answering machine.
- **Scheduled Callback:** A member of the household had been reached, but an interview was never completed. Specific callback times were provided.
- **No Callback Time:** The caller spoke to an informant, but no specific callback time was provided. No interview was completed.
- **Partial:** Part of an interview was conducted, but the interview was never completed.
- **Refusal:** A member of the household refused to complete the survey.
- **Completed:** Completed interview with the eligible respondent.
- **Phone Not Available:** The number was

determined to be invalid (unassigned, business number). If the Phone number belonged to someone under 18, the number was considered invalid. If the number went to a home outside the research area, it was considered invalid. Duplicate numbers were considered invalid.

- **Person Not Available:** The qualified respondent cannot be reached (language barrier, blocked number, the respondent is too ill to respond; the respondent is gone for the duration of data collection).

**Table 1. Comparison of Butte Environmental Council (BEC) and American Association of Public Opinion Research (AAPOR) Calling Outcome Disposition Codes.**

<b>BEC Designation</b>	<b>AAPOR Designation</b>	<b>BEC Abbreviation</b>
Never Answered	Unknown If Household is Occupied	NA
Answering Machine	Non-Contact	AM; BZY
Scheduled Callback	Non-Contact	CB
No Callback Time	Non-Contact	CB
Partial	Partial Interview	Partial
Refusal	Refusal or Break-off	REF
Completed	Completed Interview	COMP
Phone Not Available	Not Eligible	NIS; FAX; BUS
Person Not Available	Non-Contact	LANG; BLCK

### Cooperation Rate

According to AAPOR, **Cooperation Rate** is defined as "the proportion of all cases interviewed of all eligible cases ever contacted". There are four cooperation rates defined by AAPOR. **Cooperation Rate 1 (COOP1)**, or the minimum cooperation rate, "is the number of completed interviews divided by the number of interviews (complete plus partial) plus the number of non-interviews that involve the identification of and contact with an eligible respondent (refusal or break-off). The entire equation for **COOP1** is:

$$\frac{I}{I + R + P}$$

For the Chico USA survey, the equation would be:

$$\frac{350}{350 + 547 + 4} = 38.8\%$$

Thus, the cooperation rate for the Chico USA survey was 38.8%

### Demographics of the Sample

The following is a summary of the demographics for the survey samples. Tables 2-7 present all the demographics of survey respondents. **The Chico USA survey demographic responses did not vary markedly from the U.S. Census Bureau demographics for Chico, California. This validates the Chico USA sample as representative of the population surveyed.** (See Appendix B, for U.S. Census Bureau demographics for Chico, CA, for comparison to Chico USA Survey demographics.)

- **An equal percentage of men and women responded to the survey.**



**Table 2. Responses to the Chico USA Survey by gender**

<b>GENDER</b>	<b>FREQUENCY AND PERCENTAGE</b>
Male	165 49%
Female	175 51%
Totals	<b>340</b> <b>97%</b>

- The number of years that respondents have lived in the Chico, Cohasset and Forest Ranch areas was fairly evenly dispersed, with **the largest percentage of 25% percent for length of time lived in the area as “under 5 years.”** 25% of respondents have lived in the area for 5 to 15 years; 25% of the respondents have lived in the area for 16 to 30 years; and 25% of respondents have lived in the area for 30+ years.

**Table 3. Responses to the Chico USA Survey by number of years lived in the Chico, Cohasset and Forest Ranch areas (combined)**

<b>NUMBER OF YEARS LIVED IN THE AREA</b>	<b>PERCENTAGE</b>
LESS THAN 5	25%
5 to 15	25%
16 to 30	25%
30+	25%
<b>TOTALS</b>	<b>100.0%</b>

- **A significantly larger percentage of the respondents were in the age bracket 51 – 90.** 50% of the survey respondents fell into this age category. 25% of the respondents were ages 30 – 50, and 25% were ages 18 – 29.

**Table 4. Responses to the Chico USA Survey by age category**

<b>AGE</b>	<b>PERCENTAGE</b>
18 - 29	25%
30 - 50	25%
51 - 90	50%
<b>Totals</b>	<b>100.0%</b>

- Education levels of respondents are on average high. **25% of respondents have completed a BA or BS degree** and approximately **20% of respondents have Graduate level degrees.** Another 25% of respondents have some college, but no degree; 10% of respondents have completed and AA degree; 14% of respondents have completed high school; and 5.5% of respondents, combined, did not graduate from high school, or obtained a GED or vocational certificate.

**Table 5. Responses to the Chico USA Survey by education levels**

<b>EDUCATION LEVEL</b>	<b>FREQUENCY AND PERCENTAGE</b>
LESS THAN HIGH SCHOOL	19 4%
HIGH SCHOOL GRADUATE	48 14%
SOME COLLEGE OR TRADE SCHOOL	98 27%
COLLEGE GRADUATE	121 35%
GRADUATE OR PROFESSIONAL DEGREE	68 20%
<i>TOTALS</i>	<b>350</b> <b>100%</b>

- **Percentages of respondents who were employed full-time were significantly higher.** Almost 50% of the respondents were employed full-time. 25% of respondents were retired. The following employment

status categories were below 10%: part-time; unemployed; stay-at-home parent; disabled; student.

**Table 6. Responses to the Chico USA Survey by employment status**

<b>EMPLOYMENT STATUS</b>	<b>FREQUENCY AND PERCENTAGE</b>
EMPLOYED FULL-TIME	156 44%
EMPLOYED PART-TIME	30 9%
UNEMPLOYED	12 3%
STAY-AT-HOME PARENT	17 5%
RETIRED	87 25%
DISABLED	15 4%
STUDENT	31 9%
Totals	<b>350</b> <b>100.0%</b>

- Reported household income percentages of respondents were fairly evenly dispersed, with the largest category of “under \$25,000,” at 25%. 12% of respondents reported at “\$25,000 - \$34,999; 19% of respondents reported at “\$35,000 - \$49,999; 14% of respondents reported at “\$50,000 - \$74,999; 8% of respondents reported at “\$75,000 - \$99,999; 10% of respondents reported “Over \$100,000”; and 12% of respondents refused to state their income.**

**Table 7. Responses to the Chico USA Survey by annual household income level**

<b>INCOME</b>	<b>FREQUENCY AND PERCENTAGE</b>
LESS THAN \$25,000	88 25%
\$25,000 - \$34,999	43 12%
\$35,000 - \$49,999	66 19%
\$50,000 - \$74,999	48 14%
\$75,000 - \$99,999	29 8%
\$100,000 OR MORE	35 10%
Refused	41 12%
<b>Totals</b>	<b>350</b> <b>100.0%</b>

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**Public Knowledge Questions**

The original survey questionnaire is attached in Appendix A. The numbers corresponding to the following questions and related tables, correspond to the original survey.

The survey questions are discussed out of sequence in order to group them into major related topics.

The following is a summary of the public knowledge questions that were posed in the survey regarding: Urban runoff pollution in the Chico area and its effects on local creeks and streams; Protection of water quality; and Use of environmentally friendly products. Tables 8- 27 present public knowledge of survey respondents on urban runoff pollution issues. Graphs are used to illustrate the data where there are major findings.

**Public Knowledge  
of Urban Runoff  
Pollution Issues**

1. In your opinion, which of the following best describes the condition of Butte County Streams in residential and urban areas?

**Table 8**

	Frequency	Percent
Impaired by pollution	44	12.6
Some minor pollution	235	67.3
Pristine	43	12.3
Don't know	28	7.7
Total	350	100.0
Total	350	

**82% of survey respondents think that storm-water runoff carries pollution to creeks, but they do not know how it happens. (See Question 16, Table19).**

2. Do you think storm-water runoff from urban residential areas carries pollution to creeks?

**Table 9**

	Frequency	Percent
Yes	286	81.9
No	45	12.6
Don't know	19	5.4
Total	350	100.0
Total	350	

\*The category “No Answer” in questions 2(a)(1) – 2(a)(9) applies to those survey respondents who answered “No” to the question: “Do you think storm-water runoff from urban residential areas carries pollution to creeks?”

2(a)(1) Do you think cigarettes causes urban runoff pollution of creeks?

**Table 10**

	Frequency	Percent
No	132	42.2
Yes	181	57.8
No Answer	37	100.0
Total	350	

2(a)(2) Do you think roadside litter causes urban runoff pollution of creeks?

**Table 11**

	Frequency	Percent
No	68	21.7
Yes	245	78.3
No Answer	37	100.0
Total	350	

2(a)(3) Do you think animal waste causes urban runoff pollution of creeks?

**Table 12**

	Frequency	Percent
No	113	36.1
Yes	200	63.9
No Answer	37	100.0
Total	350	

2(a)(4) Do you think fertilizer causes urban runoff pollution of creeks?

**Table 13**

	Frequency	Percent
No	70	22.4
Yes	243	77.6
No Answer	37	100.0
Total	350	

2(a)(5) Do you think pesticides cause urban runoff pollution of creeks?

**Table 14**

	Frequency	Percent
No	42	13.4
Yes	271	86.6
No Answer	37	100.0
Total	350	

2(a)(6) ) Do you think soil runoff causes urban runoff pollution of creeks?

**Table 15**

	Frequency	Valid Percent
Valid No	176	56.2
Valid Yes	137	43.8
No Answer	37	100.0
Total	350	

2(a)(7) Do you think lawn waste causes urban runoff pollution of creeks?

**Table 16**

	Frequency	Percent
No	157	50.2
Yes	156	49.8
No Answer	37	100.0
Total	350	

2(a)(8) Which of the following causes urban runoff pollution of creeks? **Other**

**Table 17**

	Frequency	Percent
No	264	84.3
Yes	49	15.6
No Answer	37	100.0
Total	350	

2(a)(9) Which of the following causes urban runoff pollution of creeks? **I don't know.**

**Table 18**

	Frequency	Percent
No	304	97.4
Yes	1	2.6
No Answer	37	
Total	350	100.0

**Only one-third of survey respondents are aware that stormwater runoff goes directly into local creeks and streams, without being treated by conventional treatment methods.**

16(a) In your opinion, where does most of the runoff from your yard, gutter, street or road end up?

**Table 19**

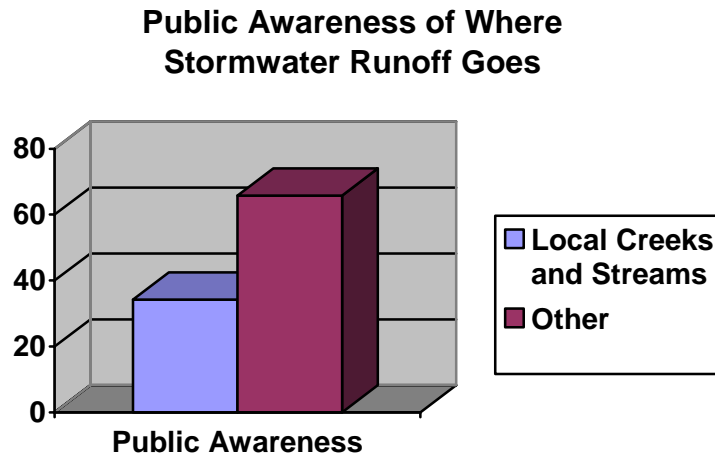
	Frequency	Percent
City sewage treatment plant	118	33.8
Local creeks and streams	120	34.2
Outlying farmland	24	6.9
Septic tank	22	6.3
Other	33	9.4
I don't know	33	9.4
Total	350	100.0

**When asked where stormwater runoff from their driveways, gutters, yards or street end-up, only one-third of survey respondents knew that stormwater runoff goes directly into local creeks and streams.**



This indicates a public need for information on how stormwater runoff enters local creeks and streams, and will be a focus of the media outreach campaign.

**Graph 1**



19. How harmful do you think lawn fertilizers are to water quality?

**Table 20**

	Frequency	Percent
Not harmful	30	8.6
Somewhat harmful	119	34.0
Harmful	66	18.9
Very harmful	103	29.4
Don't know	32	9.1
Total	350	100.0

**Over one-third of survey respondents think that fertilizers are only somewhat harmful to water quality. This indicates a focus need for the media campaign.**

20. How harmful do you think cigarettes butts on the ground are to water quality?

**Table 21**

	Frequency	Percent
Not harmful	36	10.3
Somewhat harmful	100	28.6
Harmful	77	22.0
Very harmful	107	30.5
Don't know	30	8.6
Total	350	100.0

21. How harmful do you think it is to water quality to let anti-freeze run into the gutter or onto the ground?

**Table 22**

	Frequency	Percent
Not harmful	6	1.7
Somewhat harmful	10	2.9
Harmful	51	14.6
Very harmful	279	79.7
Don't know	4	1.2
Total	350	100.0

**There is high public awareness of the harmfulness of anti-freeze runoff to water quality. This indicates a low priority for the media campaign. This information can be provided to the public, but it does not need to be emphasized.**

22. How harmful do you think it is to water quality to dump lawn clippings into the creeks, or along the banks of the creeks?

**Table 23**

	Frequency	Percent
Not harmful	56	16.0
Somewhat harmful	114	32.6
Harmful	95	27.1
Very harmful	61	17.4
Don't know	24	6.9
Total	350	100.0

25. In your opinion, how harmful is used oil to water quality?

**Table 24**

	Frequency	Percent
Not harmful	2	.6
Somewhat harmful	11	3.2
Harmful	42	12.2
Very harmful	288	82.0
Don't know	7	2.0
Total	350	

**There is high public awareness of the harmfulness of used oil runoff to water quality. This indicates a low priority for the media campaign. This information can be provided to the public, but it does not need to be emphasized.**

27. In your opinion, how harmful is (non-biodegradable) roadside litter to water quality?

**Table 25**

	Frequency	Percent
Not harmful	25	7.1
Somewhat harmful	87	24.9
Harmful	104	29.7
Very harmful	119	34.0
Don't know	15	4.3
Total	350	100.0

28. In your opinion, how does soil runoff affect a stream or creek?

**Table 26**

	Frequency	Percent
It supports life in the stream	35	10.0
It has no effect	50	14.3
It pollutes the water	205	58.6
Other	29	8.3
Don't know	31	8.9
Total	350	100.0

29. In your opinion, how harmful is soil runoff to water quality?

**Table 27**

	Frequency	Percent
Not harmful	54	15.5
Somewhat harmful	123	35.1
Harmful	71	20.3
Very harmful	78	22.3
Don't know	24	6.9
Total	350	100.0

**Public Knowledge of Protection of Water Quality**

Tables 28- 46 and Graphs 2-5 present public knowledge of survey respondents on protection of water quality.

3. In your opinion, what is the best way to protect water quality while cleaning your driveway and sidewalks?

**Table 28**

	Frequency	Percent
Hosing down with water	60	17.1
Sweeping with a broom	261	74.6
Other	19	5.4
Don't know	10	2.9
Total	350	100.0

4. In your opinion, what is the best way to clean your Bar-B-Q grill to protect water quality?

**25% of survey respondents chose the “other” option and stated that they think that the best way to clean their Bar-B-Q grills is to let it “burn-off.”**

**Table 29**

	Frequency	Percent
In the kitchen sink with a scrub brush	123	35.1
In the yard with a hose and a scrub brush	113	32.3
In the yard with a hose and oven cleaning product	8	2.3
Other	91	26.0
Don't know	15	4.3
Total	350	100.0

5(a) What do you think are permissible ways to dispose of your TVs, computer parts, cell phones, oil, batteries, paint, and fluorescent light bulbs when you no longer have a use for them?

**Table 30**

	Frequency	Percent
Take them to the dump	33	9.4
Take them to a toxic waste recycling center	276	78.9
Throw them in the garbage can	20	5.7
Other	11	3.1
I don't know	10	2.9
Total	350	100.0

6. To protect water quality, would you say that recycling TVs is not important, somewhat important, important, or very important?

**Table 31**

	Frequency	Percent
Not important	27	7.7
Somewhat important	50	14.3
Important	88	25.1
Very important	153	43.7
Don't know	32	9.2
Total	350	100.0

7. To protect water quality, would you say that recycling oil is not important, somewhat important, important, or very important?

**Table 32**

	Frequency	Percent
Not important	2	.6
Somewhat important	5	1.4
Important	55	15.7
Very important	286	81.7
Don't know	2	.6
Total	350	100.0

8. To protect water quality, would you say that recycling batteries is not important, somewhat important, important, or very important?

**Table 33**

	Frequency	Percent
Not important	7	2.0
Somewhat important	16	4.6
Important	66	18.9
Very important	256	73.1
Don't know	5	1.4
Total	350	100.0

9. To protect water quality, would you say that recycling paint is not important, somewhat important, important, or very important?

**Table 34**

	Frequency	Percent
Not important	7	2.0
Somewhat important	23	6.6
Important	78	22.3
Very important	234	66.9
Don't know	8	2.3
Total	350	100.0

10. To protect water quality, would you say that recycling cell phones is not important, somewhat important, important, or very important?

**Table 35**

	Frequency	Percent
Not important	17	4.9
Somewhat important	50	14.3
Important	98	28.0
Very important	156	44.6
Don't know	29	8.3
Total	350	100.0

11. To protect water quality, would you say that recycling household chemicals (i.e., insecticides, cleaners, etc.) is not important, somewhat important, important, or very important?

**Table 36**

	Frequency	Percent
Not important	10	2.9
Somewhat important	13	3.7
Important	81	23.1
Very important	231	66.0
Don't know	15	4.0
Total	350	100.0

Questions 15, 15(a) and 15(c), Tables 37-39, and Graph 2, pertain to the question of public awareness of how to protect water quality through car washing behaviors.

92% of survey respondents own a car. **Of that 92%, over half wash their cars at home, and nearly 10% wash their cars both at home and at a commercial car wash. Of the half that washes their cars at home, the majority wash their cars in the driveway, with another near 10% washing their cars in the street. This creates an urban runoff pollution issue, and indicates a focus need for the media outreach campaign.**

The percentages reflect percentages of total survey respondents: 350.

15. Do you own a car?

**Table 37**

	Frequency	Percent
Yes	322	92.0
No	28	8.0
Total	350	100.0

15(a) When you wash your car, do you wash it at home, or do you take your car to a commercial car wash?

**Table 38**

	Frequency	Percent
Home	147	42.0
Commercial car wash	144	41.1
Both	31	8.9
*Total	322	92.0

**\*Totals are reflective of the 92% of survey respondents that own cars.**

15(c)(1) If at home, where do you wash your car?

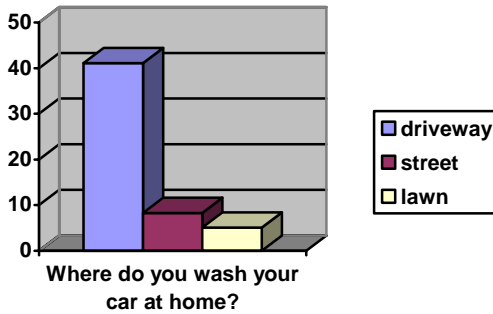
**Table 39**

	Frequency	Percent
In the driveway	144	41.1
In the street	4.3	8.3
On the lawn	18	5.1
Total	181	51.7



**Only 5% of survey respondents that own a car, and wash it at home, wash it on the lawn.**

**Graph 2**



Questions 17, 17(a) and 17(b), Tables 40-42, and Graph 3, pertain to the question of public awareness of how to protect water quality through lawn and garden care behaviors.

17. Do you have a lawn or garden?

**Table 40**

	Frequency	Percent
Yes	267	76.3
No	83	23.7
Total	350	100.0

**Of the 76% of survey respondents that have a lawn or garden, 26% apply pesticides.**

17(a) Do you apply pesticides to your lawn or garden?

**Table 41**

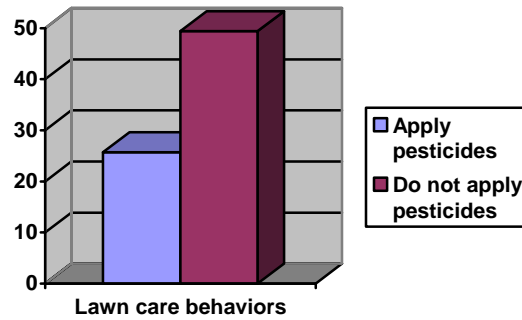
	Frequency	Percent
*Yes	90	25.7
No	173	49.4
**Total	267	76.3

**\*“Yes” percentage of 25.7% is of total survey respondents; 350.**

**\*\*Total is 76% of survey respondents that have lawns or gardens.**

**One-fourth of survey respondents apply pesticides to their lawns and gardens.** This indicates a focus need for the media campaign. **Public education is needed for alternative lawn and garden care methods and the importance of considering the weather before applying fertilizers and pesticides.**

**Graph 3**



\*Total reflects percentage of survey respondents that have lawns and gardens.

17(b) Do you consider the weather forecast before applying pesticides and fertilizers to your lawn or garden?

**Table 42**

	Frequency	Percent
Yes	81	23.1
No	59	16.9
*Total	140	40.0

**\*Totals are reflective of the 76% of survey respondents that have lawns or gardens, and the 26% that apply pesticides.**

Question 18, Table 43, pertains to the question of public awareness of how to protect water quality through green waste disposal behaviors.

18. How do you dispose of your green waste, such as leaves & lawn clippings?

**\*Table 43**

	Frequency	Percent
Green waste pick-up	146	41.7
Garbage	54	15.4
Creeks or streams	2	.6
Compost it	85	24.3
Burn it	25	7.1
I don't, it doesn't apply	48	13.7
Other	22	6.3

\*Table 43 does not include totals. Survey respondents were able to choose more than one option.

Questions 24, 24(a) and 26, Tables 44- 45, and Graph 4 pertain to the question of public awareness of how to protect water quality through automobile maintenance behaviors.

Responses to questions 24, 24(a) and 26 show that **an overwhelming majority of survey respondents do not change their automobile oil at home, and of the few that do, the majority recycle their used oil.**

**Public awareness of the importance of proper disposal of used oil is high.** This indicates a low focus need for the media campaign.

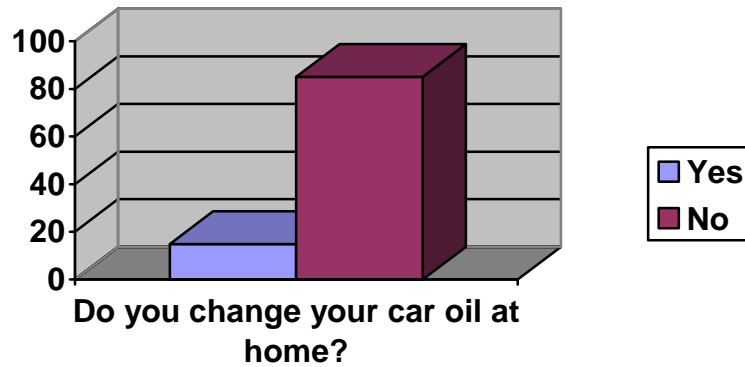
24. Do you change your automobile oil at home?

**Table 44**

	Frequency	Percent
Yes	52	14.9
No	298	85.1
Total	350	100.0

Graph 4

### Percentage of Public that Changes their Car Oil at Home



\*24(a) How do you dispose of your used oil?

\*Question 24(a) is an open-ended question

**Of the 15% of survey respondents that change their oil at home, 45 out of 52 responded that they recycle their used oil at auto parts stores or toxic waste recycling centers..**

26. What do you think is the best way to dispose of used oil?

Table 45

	Frequency	Percent
In the gutter	1	.3
In the yard	2	.6
In the garbage	7	2.0
At a recycling center	334	95.4
Other	2	.6
Don't know	4	1.2
Total	350	100.0

23. In terms of protection of water quality, which do you think is the best way to dispose of animal waste?

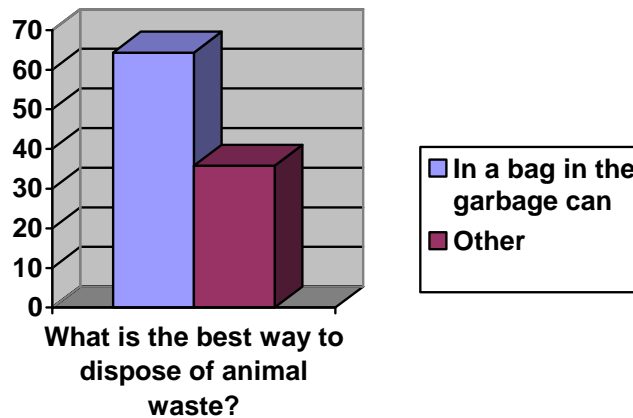
**Table 46**

	Frequency	Percent
Leave it to decompose	92	26.3
In a bag, in the garbage can	225	64.3
Let it wash away with gutter runoff	6	1.7
Other	24	6.9
Don't know	3	.9
Total	350	100.0

**Over one-third of survey respondents are not aware that the best method of animal waste disposal, for the protection of water quality, is to dispose of it in a bag, in the garbage can.**

Although the majority of survey respondents are aware of the best method of disposal of pet waste, the percentage of those that are unaware is high. **This indicates that there is a focus need for the media campaign, to educate the public on proper disposal of animal waste for protection of water quality.**

**Graph 5**



**Public Knowledge  
and Use of  
Environmentally  
Friendly Products**

Questions 12-14(a) and 15(b), Tables 47-50, and Graph 6 pertain to public knowledge and use of environmentally friendly products.

**Nearly 40% of survey respondents do not know of any environmentally friendly products.**

12. Do you know of any environmentally friendly cleaning products and/or lawn and garden care products?

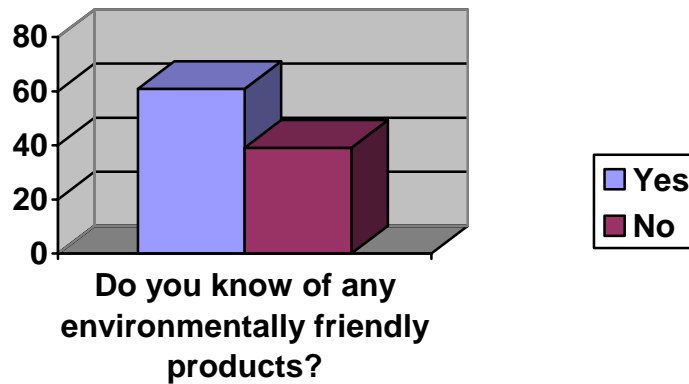
**Table 47**

	Frequency	Percent
Yes	213	60.9
No	137	39.1
Total	350	100.0

Although the majority of survey respondents know of some environmentally friendly products, the percentage of those that are unaware is high. **This indicates that there is a focus need for the media campaign, to educate the public on use of environmentally friendly products.**

**Graph 6**

**Public Knowledge of Environmentally  
Friendly Products**



13. Do you know where to find environmentally friendly, alternative products for household cleaning and/or gardening in your community or online?

**Almost one-third of survey respondents do not know where to find environmentally friendly products.**

**This indicates a need focus for the media campaign, to educate the public on where to find environmentally friendly products.**

**Table 48**

	Frequency	Percent
Yes	247	70.6
No	103	29.4
Total	350	100.0

14. Are you currently using any environmentally friendly products for household cleaning and/or gardening?

**Table 49**

	Frequency	Percent
Yes	175	50.0
No	89	25.4
*Total	264	75.4

\*Total is out of total number of survey respondents (350) and represents the total number of survey respondents that are either know of, or where to find, environmentally friendly products.

\*14(a) What are you using?

\*This question is an open-ended question. Of those that responded to question 14 with a “Yes” response (175 survey respondents), **the majority reported that they are using Simple Green, Citrus products, baking soda and vinegar.**

15(b) If you wash your car at home, do you use environmentally "friendly" cleaning products?

**Table 50**

	Frequency	Percent
Yes	72	20.6
No	79	22.6
Don't know	25	7.1
*Total	176	50.3

\* Total is out of total survey respondents (350), and represents the total number of survey respondents that either know of, or know where to find environmentally friendly products.

## Public Opinion

Question 30, Table 51 and Graph 7 illustrate the publics' self-rating on knowledge of local water quality issues.

30. Overall, how would you rate your knowledge of local water issues?

**Table 51**

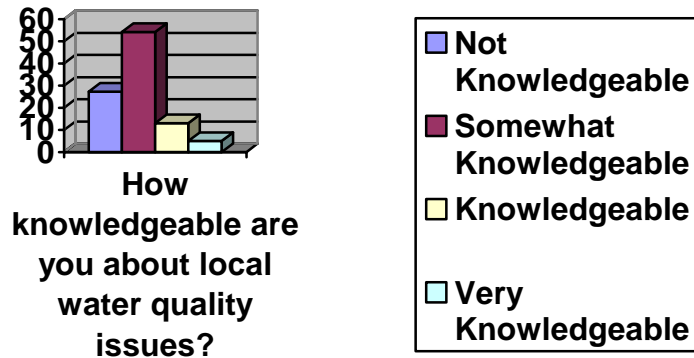
	Frequency	Percent
Not knowledgeable	96	27.4
Somewhat knowledgeable	190	54.3
Knowledgeable	46	13.1
Very knowledgeable	18	5.1
Total	350	100.0

**Only 5.1% of survey respondents believe that they are very knowledgeable about local water quality issues. This is a low rating and indicates a focus need for the media campaign.**



Graph 7

### Public Self-rating on Knowledge of Local Water Quality Issues



Questions 33-34, and Tables 52-53, illustrate the public’s opinion on the importance of environmental organizations.

**Survey respondents reveal that there is a high level of importance placed on both environmental advocacy and education organizations. This indicates a receptivity to the public awareness multi-media campaign.**

33. How important do you think it is to have environmental advocacy organizations in our area?

**Table 52**

	Frequency	Percent
Not important	13	3.7
Somewhat important	64	18.3
Important	82	23.4
Very important	184	52.6
Don't know	7	2.0
Total	350	100.0

34. How important do you think it is to have environmental education organizations in our area?

**Table 53**

	Frequency	Percent
Not important	6	1.7
Somewhat important	48	13.7
Important	90	25.7
Very important	205	58.6
Don't know	1	.3
Total	350	100.0

**Public  
Willingness to  
Pay for Water  
Quality  
Protection**

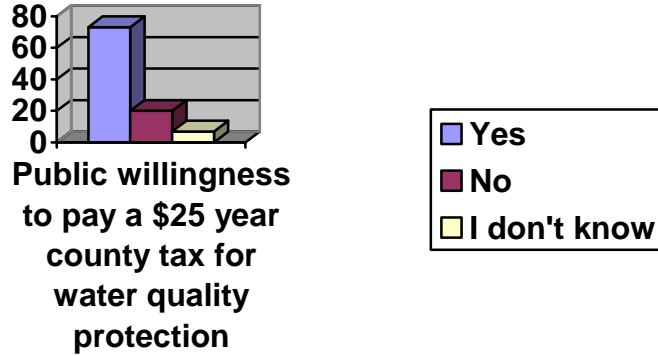
35. Would you be willing to pay \$25.00 a year in taxes to protect local water quality?

**Table 54**

	Frequency	Percent
Yes	256	73.1
No	70	20.0
Don't know	24	6.9
Total	350	100.0

Graph 8

### Public Willingness to Pay for Water Quality Protection



36. Would you be willing to pay \$50.00 a year in taxes to protect local water quality?

Table 55

	Frequency	Percent
Yes	142	40.6
No	127	36.3
Don't know	32	9.1
*Total	301	86.0

\*Total represents survey respondents that gave a “Yes” response to question 35.

### Public Choices of Information Sources

The following indicate public choices of information sources on local environmental issues and home maintenance.

**From a list of 14 options for information sources on local environmental issues and home maintenance, survey respondents’ number one choice was television.**

Table 56 and Graph 8 are representative of the top 5 results from Question 31 and 31(a) on the original survey questionnaire (Appendix A).

**The top 5 choices for sources of information on local environmental issues are listed below, in order from the number one choice to the number five choice.**

31. Which of the following do you use as primary sources of information on local environmental issues?

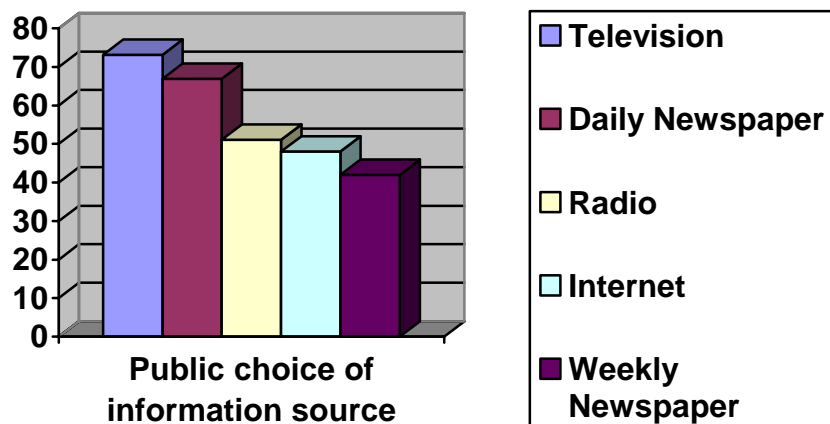
**Table 56**

<b>Information Source</b>	<b>“Yes” Response</b>	<b>Frequency</b>	<b>Percent</b>
Television	Yes	256	73.1
Daily Newspaper	Yes	234	66.9
Radio	Yes	179	51.1
Internet	Yes	168	48.0
Weekly Newspaper	Yes	147	42.0

\*Totals are not included in Table 56. Survey respondents were able to select more than one option. They selected their number one choice in an open-ended question.

**Graph 9**

### Public Choice of Information Sources on Local Environmental Issues



Additionally, for local environmental issues, close to 40% of survey respondents use magazines, and approximately 30% use community organization newsletters, brochures and events.

Table 57 and Graph 9 are representative of the top 5 results from Question 32 and 32(a) on the original survey questionnaire (Appendix A).

**The top 5 choices for sources of information on home maintenance are listed below, in order from the number one choice to the number five choice.**

32. Which of the following do you use as primary sources of information on home maintenance?

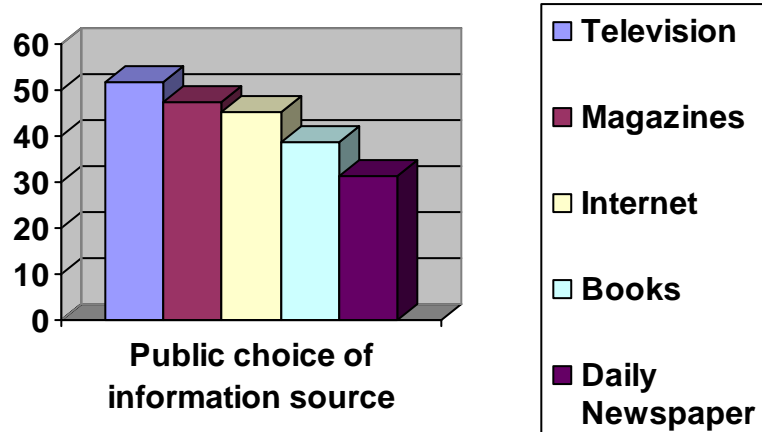
**Table 57**

<b>Information Source</b>	<b>“Yes” Response</b>	<b>Frequency</b>	<b>Percent</b>
Television	Yes	181	51.7
Magazines	Yes	166	47.4
Internet	Yes	158	45.1
Books	Yes	135	38.6
Daily Newspaper	Yes	110	31.4

\*Totals are not included in Table 56. Survey respondents were able to select more than one option. They selected their number one choice in an open-ended question.

Graph 10

### Public Choice of Information Sources on Home Maintenance



Additionally, **only 15% of survey respondents chose community organization brochures, newsletters or events** for information on home maintenance. 25% chose Radio, and close to 20% chose the weekly newspaper. Word-of-mouth was a popular response when survey respondents were asked to give any other choices for primary sources of information on home maintenance.

**Television, the daily newspaper and the Internet are in the top 5 category for public choice of information sources for both local environmental issues and home maintenance.**

## ***Conclusion***

Significant numbers of Chico residents are unaware that stormwater is not treated by conventional treatment methods before entering local creeks and streams. Information about where and how stormwater enters our local creeks and streams is a pivotal message that must be relayed through the educational outreach efforts.

Since the majority of the public is unaware of their personal impact on the quality of the water in local creeks and streams through their household-generated urban runoff pollution, the individual's impact should be emphasized in the media campaign.

The media campaign should educate the public about the contribution of automobile products, and emphasize the harmful impact of yard and garden chemicals, cigarette litter, pet waste, soil and green waste runoff. Better management practices of car washing behaviors should also be emphasized. The campaign should educate the public about the importance of washing cars at a commercial car wash, or if at home, on the lawn.

Television, local newspapers, magazines and the Internet were identified by respondents as the best sources for information about polluted runoff. While the Internet is an inexpensive media source, the other choices are likely to be expensive methods for outreach. Resources will have to be carefully allocated and new resources found to take advantage of this finding. This study has revealed that 75% of the survey sample is willing to pay \$25 a year in a county tax for the protection of local water quality. This may be a future source of financial support with which to fund television and newspaper ads.

## **Appendix A**



## Chico U.S.A. Urban Water Quality Survey Questionnaire

### Introduction

Hello. My name is \_\_\_\_\_. I'm calling on behalf of the City of Chico and the Butte Environmental Council. (Can you hear me ok?) We're conducting a brief and important survey on the present and future water quality in our area. I need to interview someone who is over 18. Are you 18 years old, or older? Your participation in this survey is completely voluntary and your responses to this questionnaire will remain completely anonymous.

1. In your opinion, which of the following best describes the condition of Butte County streams in residential and urban areas?  
 Pristine     Some minor pollution     Impaired by pollution  
\_\_\_\_\_(I don't know) **(Interviewer - Select "I don't know" only if participant states that they don't know. Do not offer it as a choice.)**
  
2. Do you think storm-water runoff from urban residential areas carries pollution to creeks?  
 Yes (proceed to Q 2a)     No (proceed to Q3)  
\_\_\_\_\_(I don't know)  
  
2a. (If yes) In your opinion, which of the following causes urban runoff pollution of creeks?  
 Cigarettes     Roadside litter     Animal waste     Fertilizer  
 Pesticides     Soil     Lawn waste     Other  
\_\_\_\_\_(I don't know)
  
3. In your opinion, what is the **best** way to protect water quality while cleaning your driveway and sidewalks? (select only one)  
 hosing down with water     sweeping with a broom     other  
\_\_\_\_\_(I don't know)
  
4. In your opinion, what is the **best** way to clean your Bar-B-Q grill to protect water quality?  
(select only one)  
 in the kitchen sink with a scrub brush     in the yard with a hose and a scrub brush  
 in the yard with a hose and oven cleaning products     other  
\_\_\_\_\_(I don't know)
  
5. What do you think are permissible ways to dispose of your TVs, computer parts, cell phones, oil, batteries, paint, and fluorescent light bulbs when you no longer have a use for them?  
Take them ....  
 to the dump     to a toxic waste recycling center     to the garbage can  
 other  
\_\_\_\_\_(I don't know)

6. To protect water quality, would you say that recycling TVs is ...?  
 not important       somewhat important       important       very important  
 \_\_\_\_ (I don't know)
7. To protect water quality, would you say that recycling oil is ...?  
 not important       somewhat important       important       very important  
 \_\_\_\_ (I don't know)
8. To protect water quality, would you say that recycling batteries is ...?  
 not important       somewhat important       important       very important  
 \_\_\_\_ (I don't know)
9. To protect water quality, would you say that recycling paint is ...?  
 not important       somewhat important       important       very important  
 \_\_\_\_ (I don't know)
10. To protect water quality, would you say that recycling cell phones is ...?  
 not important       somewhat important       important       very important  
 \_\_\_\_ (I don't know)
11. To protect water quality, would you say that recycling household chemicals (i.e. insecticides, cleaners, etc.) is ...?  
 not important       somewhat important       important       very important  
 \_\_\_\_ (I don't know)
12. Do you know of any environmentally friendly cleaning products and/or lawn and garden care products?  
 Yes       No
13. Do you know where to find environmentally friendly, alternative products for household cleaning and/or gardening in your community or online?  
 Yes (Proceed to Q.14)       No (Proceed to Q.15)
14. Are you currently using any environmentally friendly products for household cleaning and/or gardening?  
 Yes (Proceed to Q 14a)       No \_\_\_\_ (I don't know)
- 14a. What are you using? \_\_\_\_\_
15. Do you own a car?  
 Yes (Proceed to Q.15a)       No (Proceed to Q.16)
- 15a. When you wash your car, do you wash it at home, or do you take your car to a commercial car wash?  
 Home (Proceed to Qs. 15b & 15c)       Commercial car wash (Proceed to Q.16)

15b. If at home, do you use environmentally “friendly” cleaning products?

- Yes       No      \_\_\_\_\_(I don't know)

15c. If at home, where do you wash the car?

- in the driveway       in the street       on the lawn

16. In your opinion, where does most of the runoff from your yard, gutter, street or road end up?

- the city sewage treatment plant       local creeks and streams  
 outlying farmland       a septic tank  
 other      \_\_\_\_\_ (I don't know)

17. Do you have a lawn or garden?

- Yes (Proceed to Q.17a)       No (Proceed to Q.18)

17a. Do you apply pesticides to your lawn or garden?

- Yes (Proceed to Q.17b)       No (Proceed to Q.18)

17b. Do you consider the weather forecast before applying pesticides and fertilizers to your lawn or garden?

- Yes       No

18. How do you dispose of your green waste, such as leaves & lawn clippings?

(Check all that apply)

- green waste pick-up  
 in the garbage  
 in creeks or streams  
 compost it  
 burn it  
 I don't, it doesn't apply  
 other

19. How harmful do you think lawn fertilizers are to water quality?

Would you say that they are ...?

- 1 not harmful  
 2 somewhat harmful  
 3 harmful  
 4 very harmful  
\_\_\_\_\_(I don't know)

20. How harmful do you think cigarettes butts on the ground are to water quality?

Would you say that they are ...?

- 1 not harmful  
 2 somewhat harmful  
 3 harmful  
 4 very harmful  
\_\_\_\_\_(I don't know)

21. How harmful do you think it is to water quality to let anti-freeze run into the gutter or onto the ground? Would you say it is ...?

- 1 not harmful
- 2 somewhat harmful
- 3 harmful
- 4 very harmful
- \_\_\_\_(I don't know)

22. How harmful do you think it is to water quality to dump lawn clippings into the creeks, or along the banks of the creeks? Would you say it is ...?

- 1 not harmful
- 2 somewhat harmful
- 3 harmful
- 4 very harmful
- \_\_\_\_(I don't know)

23. In terms of protection of water quality, which do you think is the **best** way to dispose of animal waste?

- leave it to decompose
- in a bag, in the garbage can
- let it wash away with gutter runoff
- other
- \_\_\_\_(I don't know)

24. Do you change your automobile oil at home? (Skip this question if interviewee answered "No" to Q.15)

- Yes (Proceed to Q.24a)
- No (Proceed to Q.25)

24a. (If yes) How do you dispose of your used oil?

\_\_\_\_\_

25. In your opinion, how harmful is used oil to water quality?

- 1 not harmful
- 2 somewhat harmful
- 3 harmful
- 4 very harmful
- \_\_\_\_(I don't know)

26. What do you think is the **best** way to dispose of used oil?

- in the gutter
- in the yard
- in the garbage
- at a recycling center
- other
- \_\_\_\_(I don't know)

27. In your opinion, how harmful is (non-biodegradable) roadside litter to water quality? Would you say that it is ...?

- 1 not harmful
- 2 somewhat harmful
- 3 harmful
- 4 very harmful
- \_\_\_\_(I don't know)



32. Which of the following do you use as sources of information about home maintenance?  
(Check all that apply)

- |                                    |                              |                             |
|------------------------------------|------------------------------|-----------------------------|
| Daily newspaper                    | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Weekly newspaper                   | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Television                         | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Radio                              | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Community organization newsletters | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Community organization brochures   | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Community events                   | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Internet                           | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Magazines                          | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Books                              | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Journals                           | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Other                              | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

32a. Which one of those primary sources is your number one choice?

---

33. How important do you think it is to have environmental advocacy organizations in our area?

Would you say that they are ...?

- 1 not important
- 2 somewhat important
- 3 important
- 4 very important
- \_\_\_\_(I don't know)

34. How important do you think it is to have environmental education organizations in our area?

Would you say that they are ...?

- 1 not important
- 2 somewhat important
- 3 important
- 4 very important
- \_\_\_\_(I don't know)

35. Would you be willing to pay \$25 a year in taxes to protect local water quality?

- Yes
- No (Proceed to Q 37)
- \_\_\_\_(I don't know)

36. Would you be willing to pay \$50 a year in taxes to protect local water quality?

- Yes
- No
- \_\_\_\_(I don't know)

37. How long have you lived in this area? \_\_\_\_\_(Enter the number of years)  
(Chico, Forest Ranch and/or Cohasset)

38. In what year were you born? \_\_\_\_\_

39. What is the highest level of education that you have completed?

- non High School       GED       High School       Vocational certificate  
 some college, but no degree    AA degree    BA or BS degree    Graduate level degree

40. Are you employed?    Full time                       Part time                       Unemployed  
    Stay at home parent       Retired                       Disabled  
    Student

41. Which of the following is the best estimate of your annual household income that is the total income of all the persons living in your household before taxes? (Please stop me when I read the category that best describes your household income.)

- Under \$25,000       \$25-35,000               \$35-50,000  
 \$50-75,000       \$75-100,000           More than \$100,000

Thank you for participating in the CUSA Clean Creeks Project public survey. This survey is part of a project funded by proposition 13 monies and the CALFED Bay-Delta Watershed Program, and managed by the Regional Water Quality Control Board. The results of this survey will be posted on the Butte Environmental website, by October 31, 2005 at [www.becnet.org](http://www.becnet.org), and on the following websites:

City of Chico, <http://www.chico.ca.us/> and the Big Chico Creek Watershed Alliance, [www.bigchicocreek.org](http://www.bigchicocreek.org)

Please watch the local newspapers, radio and television stations for information on the Chico USA Clean Creeks Project public survey, and look for the Chico USA water quality booth at public markets, fairs and events.

---

Interviewer:                      Print  
name \_\_\_\_\_

Signature \_\_\_\_\_

Date \_\_\_\_\_

Interviewee's Gender       Male                       Female

## **Appendix B**



## Chico (city) QuickFacts from the US Census Bureau State & County QuickFacts

### Chico (city), California

<b>People QuickFacts</b>	<b>Chico</b>	<b>California</b>
Population, 2003 estimate	67,509	35,484,453
Population, percent change, April 1, 2000 to July 1, 2003	5.7%	4.8%
Population, 2000	59,954	33,871,648
Population, percent change, 1990 to 2000	35.3%	13.6%
Persons under 5 years old, percent, 2000	6.0%	7.3%
Persons under 18 years old, percent, 2000	21.1%	27.3%
Persons 65 years old and over, percent, 2000	9.9%	10.6%
Female persons, percent, 2000	50.9%	50.2%
White persons, percent, 2000 (a)	82.4%	59.5%
Black or African American persons, percent, 2000 (a)	2.0%	6.7%
American Indian and Alaska Native persons, percent, 2000 (a)	1.3%	1.0%
Asian persons, percent, 2000 (a)	4.2%	10.9%
Native Hawaiian and Other Pacific Islander, percent, 2000 (a)	0.2%	0.3%
Persons reporting some other race, percent, 2000 (a)	5.7%	16.8%
Persons reporting two or more races, percent, 2000	4.3%	4.7%
Persons of Hispanic or Latino origin, percent, 2000 (b)	12.3%	32.4%
Living in same house in 1995 and 2000', pct age 5+, 2000	30.2%	50.2%
Foreign born persons, percent, 2000	9.0%	26.2%
Language other than English spoken at home, pct age 5+, 2000	14.1%	39.5%
High school graduates, percent of persons age 25+, 2000	87.3%	76.8%
Bachelor's degree or higher, pct of persons age 25+, 2000	33.6%	26.6%
Mean travel time to work (minutes), workers age 16+, 2000	17.4	27.7

## Chico (city) QuickFacts from the US Census Bureau

<b>People QuickFacts</b>	<b>Chico</b>	<b>California</b>
Housing units, 2000	24,386	12,214,549
Homeownership rate, 2000	40.4%	56.9%
Median value of owner-occupied Housing units, 2000	\$141,600	\$211,500
Households, 2000	23,476	11,502,870
Persons per household, 2000	2.42	2.87
Median household income, 1999	\$29,359	\$47,493
Per capita money income, 1999	\$16,970	\$22,711
Persons below poverty, percent, 1999	26.6%	14.2%
<b>Business QuickFacts</b>	<b>Chico</b>	<b>California</b>
Manufacturers shipments, 1997 (\$1000)	403,737	31,700,008
Wholesale trade sales, 1997 (\$1000)	469,076	548,864,451
Retail sales, 1997 (\$1000)	987,820	263,118,346
Retail sales per capita, 1997	\$19,486	\$8,167
Accommodation and foodservices sales, 1997 (\$1000)	94,142	42,312,641
Total number of firms, 1997	5,193	2,565,734
Minority-owned firms, percent of total, 1997	7.4%	28.8%
Women-owned firms, percent of total, 1997	39.8%	27.3%

# Chico (city) QuickFacts from the US Census Bureau

<b>Geography QuickFacts</b>	<b>Chico</b>	<b>California</b>
Land area, 2000 (square miles)	28	155,959
Persons per square mile, 2000	2,161.0	217.2
FIPS Code	13014	06

**Counties** **Butte County**

(a) Includes persons reporting only one race.  
(b) Hispanics may be of any race, so also are included in applicable race categories.

FN: Footnote on this item for this area in place of data

NA: Not available

D: Suppressed to avoid disclosure of confidential information

X: Not applicable

S: Suppressed; does not meet publication standards

Z: Value greater than zero but less than half unit of measure shown

F: Fewer than 100 firms

Source U.S. Census Bureau: State and County QuickFacts. Data derived from Population Estimates, 2000 Census of Population and Housing, 1990

Census of Population and Housing, Small Area Income and Poverty Estimates, County Business Patterns, 1997 Economic Census, Minority-

and Women-Owned Business, Building Permits, Consolidated Federal Funds Report, 1997 Census of Governments

Last Revised: Friday, 30-Sep-2005 13:00:37 EDT

census Bureau Links:

<http://quickfacts.census.gov/qfd/states/06/0613014.html> 10/5/2005