
King County

Department of Natural Resources and Parks

Water Quality Survey

December 2006



King County

Department of Natural Resources and Parks

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METHODOLOGY

This report is based on the findings of a telephone survey conducted December 3-5, 2006 by Evans/McDonough. Four hundred (400) King County residents were selected for interviewing using an RDD (Random Digit Dial) sample. This sampling method means that every working phone number in King County has an equal chance of being selected for participation in the survey. Respondents were interviewed by trained, professional telephone interviewers. Respondents were screened to make sure they were over 18 years old and lived in King County. The margin of error for the overall survey results is ± 4.9 percentage points at the 95% confidence level. This confidence level means that if the survey were repeated, it would provide the same results to within ± 4.9 percentage points 95 times out of 100.

Research Design Summary

#Interviews:	400
Interviewing Dates:	December 3-5, 2006
Margin of Error:	± 4.9 points at the 95% confidence level
Universe:	King County residents 18 years or older

Results are compared where appropriate and possible to previous water quality surveys conducted by EMC.

KEY FINDINGS

Many 2006 figures are consistent with results from previous years.

- The most important environmental problem continues to be air quality, though mentions of Global Warming are on the rise.
- A majority of residents continue to be aware that the County provides salmon and habitat protection, and they continue to overwhelmingly believe that water quality has a significant impact on salmon.
- At the same time, residents also believe the County isn't doing enough to bring salmon and bull trout back from endangerment.
- Residents continue to agree that garbage disposal, sewage treatment, and stormwater management help protect the environment.
- Residents continue to struggle in identifying the watershed they live in.
- Residents continue to be overwhelmingly concerned about the County running out of sewage treatment capacity.

Some results have declined.

- County residents are more likely in 2006 than in any other year to think our local salmon populations are at risk.
- Awareness of county water management services has dropped slightly.
- Water quality ratings have dropped nine points since 2005, and these ratings have returned to 2004 levels.
- Even though residents overwhelmingly support using as much reclaimed water as possible, they have also grown more concerned over the use of reclaimed water for growing vegetables, at nurseries, at for children's recreational fields.

There continues to be strong resident demand and support for a reclaimed water network.

- **Well over three-quarters (82%) of residents say the County should use as much reclaimed water as possible.**
- **The vast majority of residents (at least 70%) has no concerns with using reclaimed water for a variety of uses, and suggests a significant market for reclaimed water.**
- **A strong majority (72%) of residents say they would be willing to pay \$1 more per month on their sewer bill to help build a reclaimed water system.**

More than three-quarters (78%) of residents are willing to pay \$1.50 per month on their sewer bill to reduce the occurrence of sewage/stormwater releases into Puget Sound.

There is strong support (79%) for expanding the County's regional trail system, even though nearly half (47%) of residents did not use it last year.

A majority (51%) say the County should enforce County rules and regulate property owners to protect the environment and other property owners while a third (35%) say the County should protect property owners.

- **Seattle residents are most likely to say the County should enforce County rules (60%), while residents in South King County and East King County are evenly split.**

Residents are generally unfamiliar with the Natural Yard Care program.

SUMMARY OF FINDINGS

General Environmental Issues

Most Important Environmental Issue

Air and water pollution are still at the top of the list of environmental problems. But mentions of these two have declined, while mentions of global warming and our region's transportation problems are increasing.

- Air pollution mentions have declined over the last two years to 17% (30% in 2004).
- Mentions of water pollution are unchanged from 2005, and continue to be at their lowest level tested.
- Mentions of global warming have more than doubled in the last year to 16% (7% in 2005).

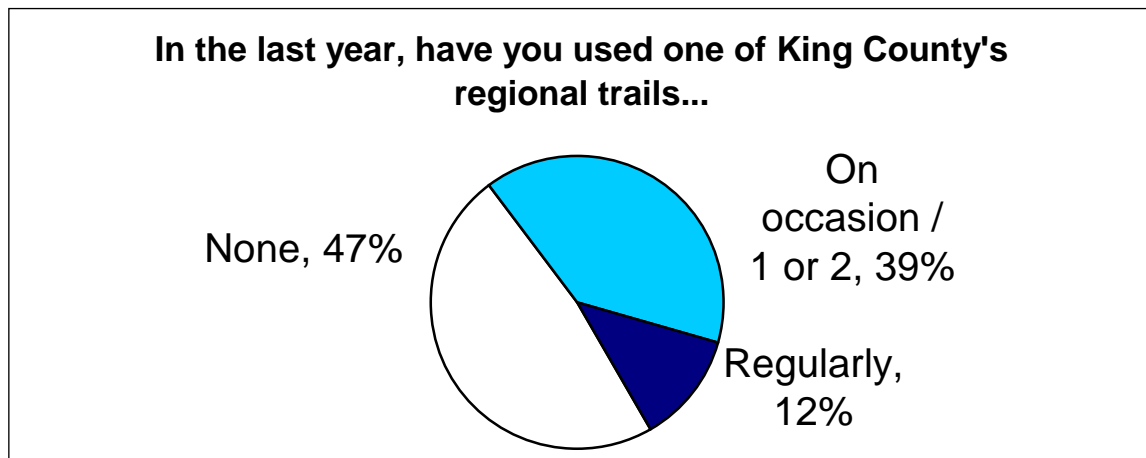
Q7. What do you think is the most important environmental issue facing our region today?

Issue	2000	2001	2002	2003	2004	2005	2006
Air pollution	38	20	19	23	30	26	17
Water pollution/quality	17	23	22	26	24	19	17
Global Warming	5	3	6	4	6	7	16
Traffic/Transportation	--	7	4	--	--	4	11
Growth/Population growth	8	16	29	12	12	10	6
Fuel Shortage/Gas Prices	--	--	--	--	--	2	4
Deforestation	5	3	4	5	3	5	3
Salmon	9	5	3	2	4	2	1
Toxic waste	2	2	3	1	2	1	1
Water Shortage/Availability	--	--	--	1	--	2	1
Vehicle Emissions	--	--	--	6	--	--	--
Energy/Power Conservation	--	--	--	1	--	--	--
Garbage/Landfills/Trash	--	--	--	1	--	--	--
Recycling	--	--	--	1	--	--	--
Anthrax	--	1	1	--	--	--	--
War/terrorism	--	1	--	--	--	--	--
None/Other/DK/Refused	17	19	10	16	19	22	21

King County's Trails

Half (51%) of King County residents have used a King County trail in the last year

- Almost as many (47%) did not use a King County regional trail in the last year.
- Most used a trail only occasionally (39%), while one resident in ten (12%) uses the regional trails on a regular basis.



- Trail usage is highest in East King County (17% Regularly / 48% Occasionally) and lowest in South King County (62% None).

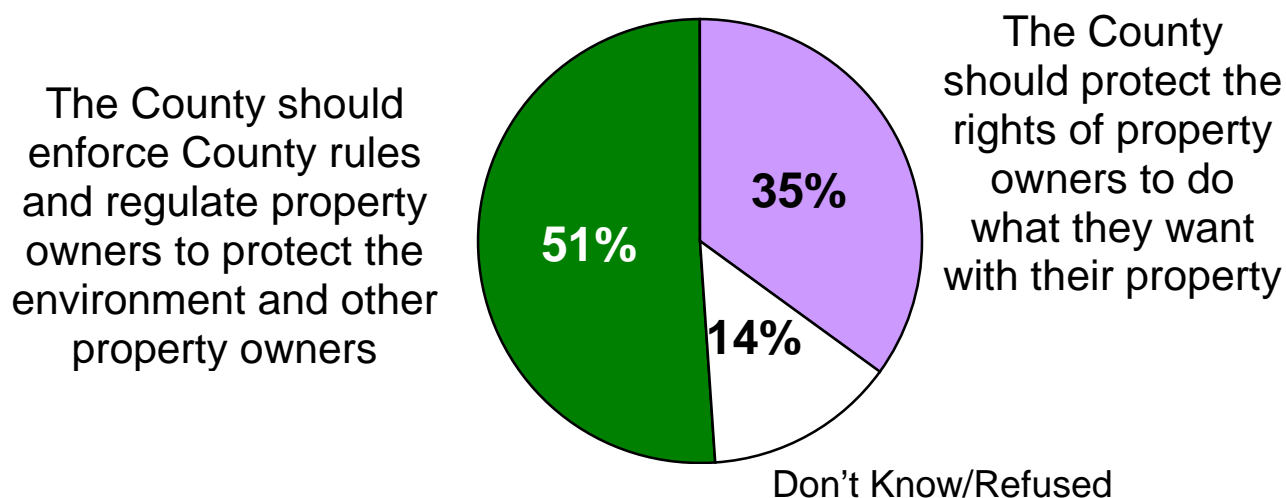
More than three-quarters (79%) of King County residents support expanding the regional trail system.

- This question is a general measure of support for expanding the system. It did not include specific items for expansion.
- Support for expansion is intense; half (50%) strongly support expansion.
- Support levels, while still strong, are the least intense in South King County (43% Strongly Support / 36% Somewhat Support).

The Citizens, The County, and Property Regulations

Half (51%) of residents think the County should enforce land use rules.

- Respondents were read a forced-choice question, and given two options.



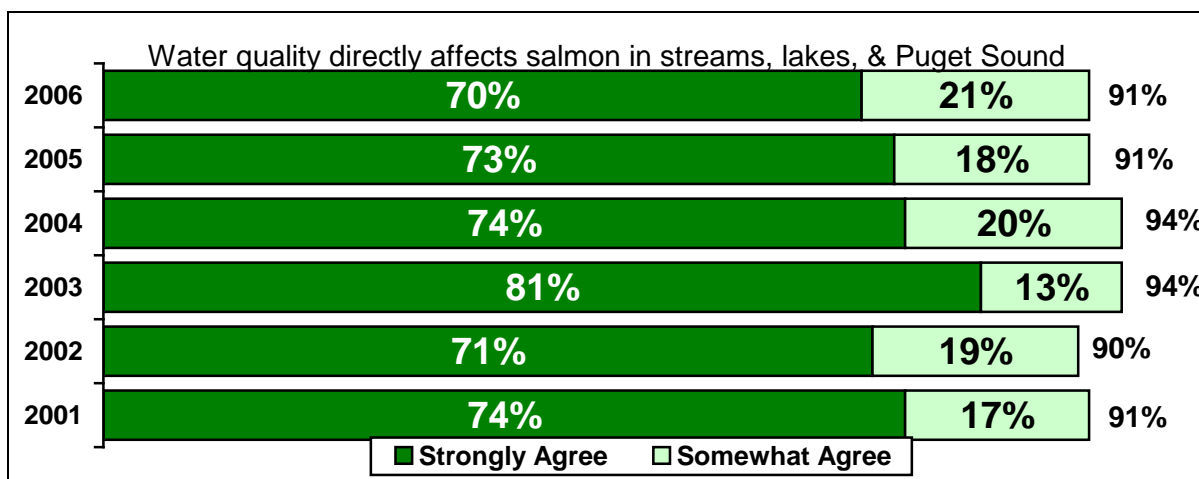
A majority (51%) of residents think King County should enforce County rules and regulate property owners to protect the environment and other property owners. A third (35%) think the County should protect the rights of property owners to do what they want with their property.

- Seattle residents are the most likely to say the County should enforce its rules; a strong majority (60%) of Seattle residents select this option.
- South King County residents (45% / 45%) and East King County residents (41% Property Rights / 39% County Rules) are evenly split on the question.

Salmon

Virtually all residents continue to agree that water quality directly affects salmon.

- As with previous years, virtually all residents strongly agree that water quality directly affects salmon in our streams, lakes, and in Puget Sound.



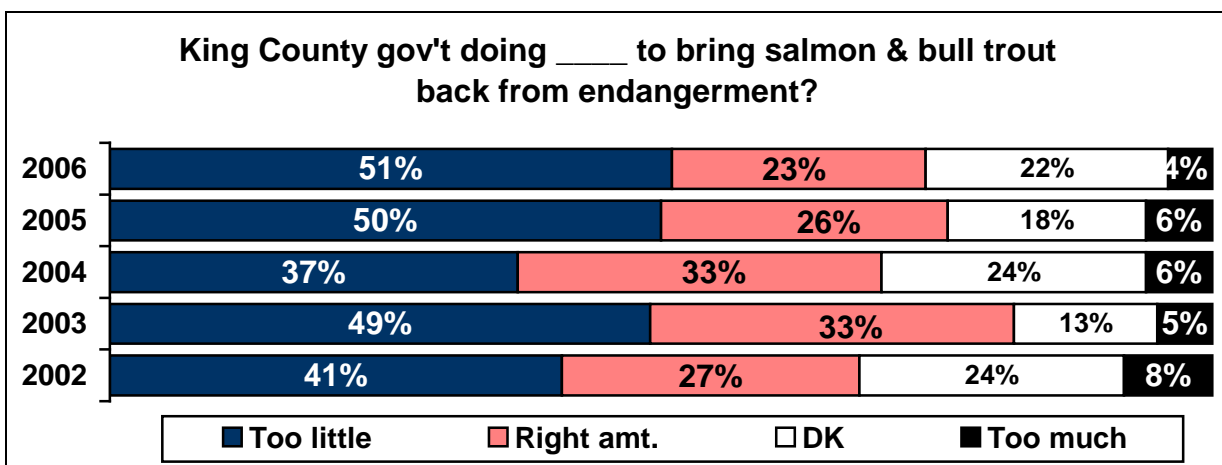
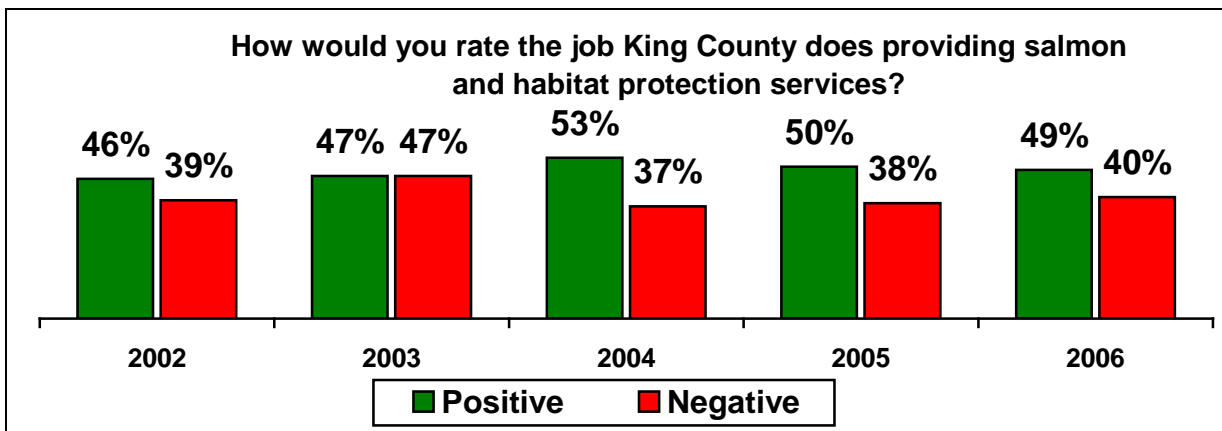
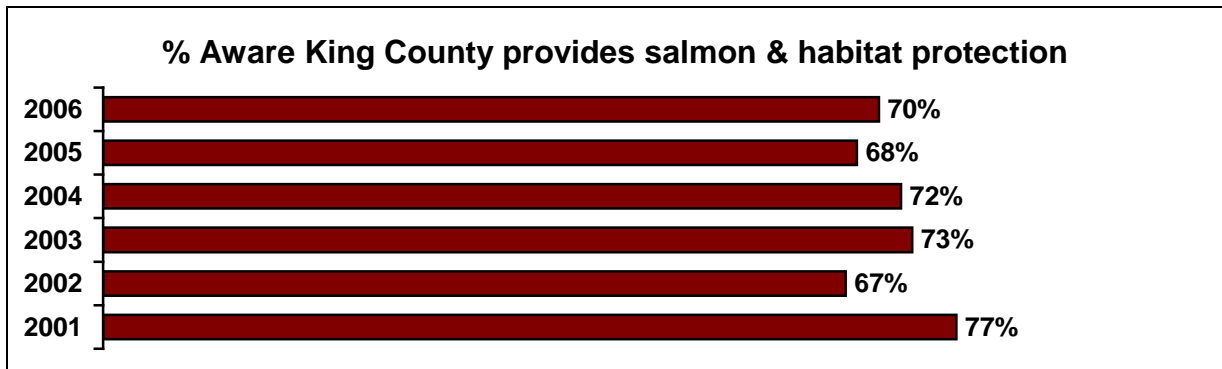
- The mean score rating how at risk salmon populations in the region are has fluctuated since 2001. This year's score is highest risk level recorded since EMC began conducting the survey.

Q28. On a scale of 1 to 7, where 1 means not at all at risk and 7 means extremely at risk, how at risk do you think salmon populations in our region are?

Rank	2001	2002	2003	2004	2005	2006
7- Extremely at risk	20	22	23	19	18	27
6	7	17	16	11	12	16
5	26	24	26	25	33	23
4	18	17	17	15	15	12
3	7	6	10	15	10	9
2	3	3	3	3	3	4
1- Not at all at risk	5	4	3	3	3	2
(Don't Know)	4	7	2	7	5	6
MEAN	4.92	5.11	5.03	4.78	4.92	5.17

As in previous surveys, most King County residents (70%) are aware that the county provides salmon and habitat protection. Ratings for the job the County does protecting salmon and salmon habitat are similar to last year's and previous figures.

- Half (51%) of residents continue to think County government is not doing enough to bring salmon and bull trout back from endangerment.

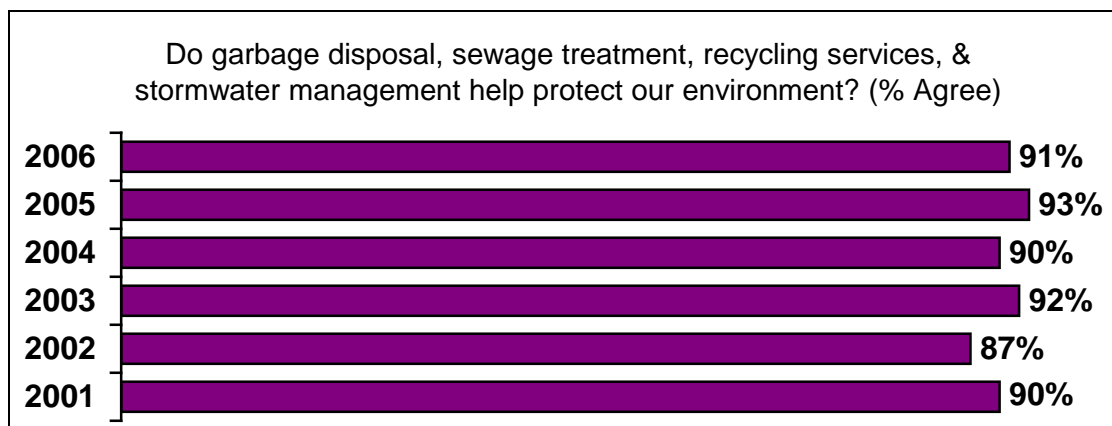


County Services

County Services and the Environment

Virtually all residents (93%) continue to agree that garbage disposal, sewage treatment, recycling and stormwater management help to protect the environment.

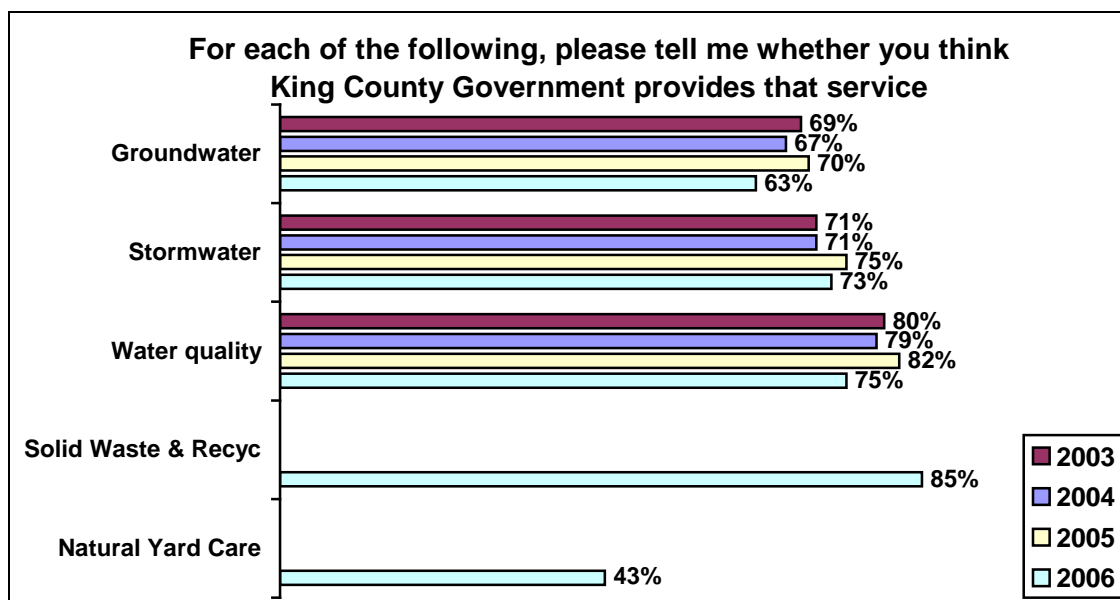
- These results are statistically equivalent to the results from previous surveys.



Familiarity with Selected King County Services

While reported awareness of King County water management services continues to be a strong majority of residents, the figures have declined.

- More than two-thirds of residents say they are aware that King County provides water quality, stormwater, and groundwater management services.



Heard About King County's Water Quality Efforts

A quarter (24%) of County residents say they have seen or heard something about King County's efforts to protect water quality.

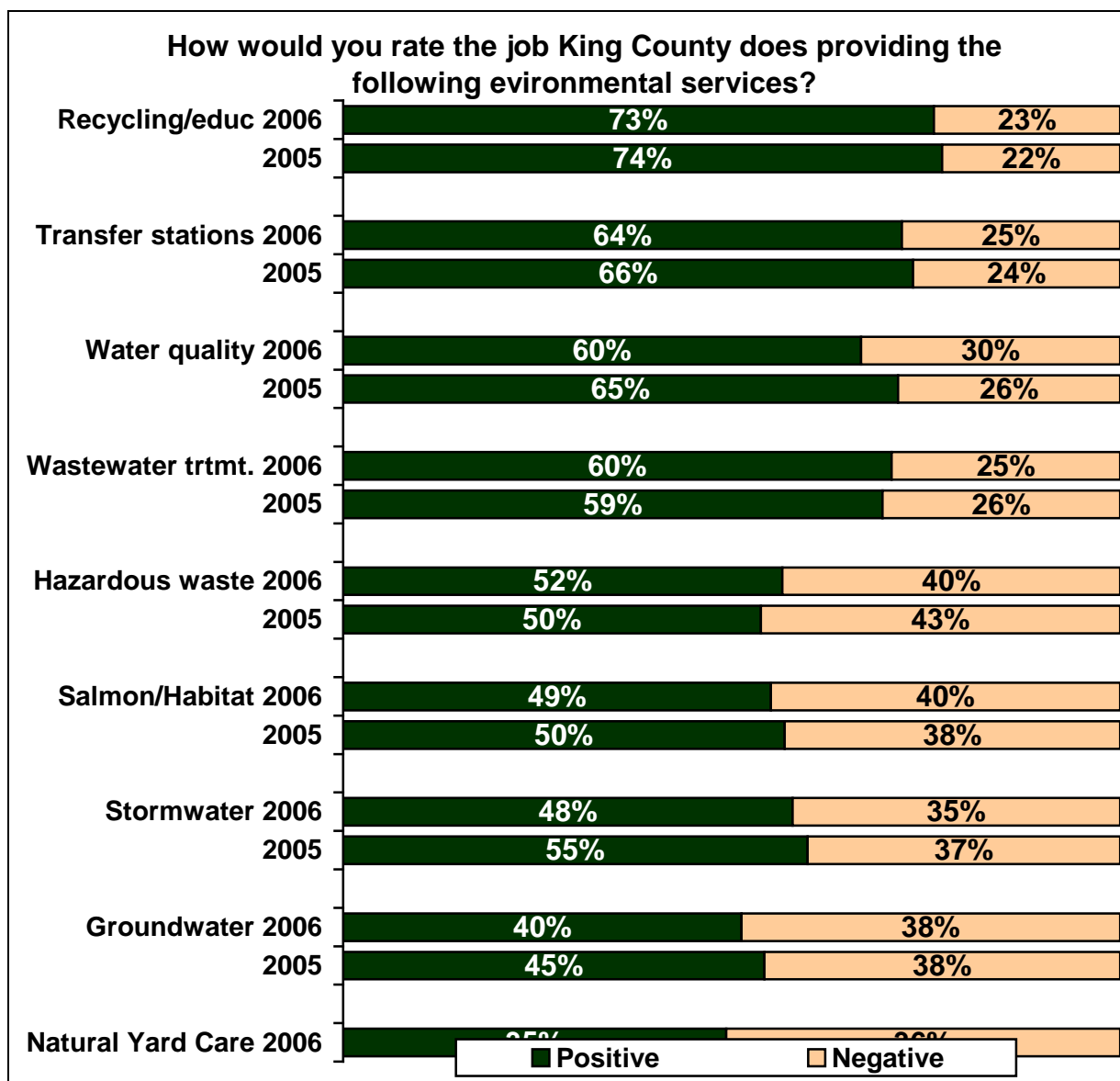
- The remaining 76% have not heard anything.
- Those that say they had heard something were asked what they have heard in a follow-up open-ended question.

Water quality / Looking for contaminants	17
Articles in the newspaper	16
New treatment plant / Center	9
Stuff in the Media	9
Salmon / Protecting Salmon in creeks	8

Rating of Selected King County Environmental Services

County residents give roughly the same ratings in 2006 to a set of job performance questions asked in 2005 and 2004. Recycling services and education (73% positive) continue to be the highest scoring item.

- Most ratings are consistent with figures from the 2005 and 2004. Only one item has changed outside the margin of error.
 - Water quality ratings have declined (-9) since 2005. The 2006 rating is very similar to the 2004 rating (62% Positive / 30% Negative).
- 2006 included Natural Yard Care for the first time in the ratings, and it is the lowest-rated item on the list. However, nearly a third (29%) of residents do not know enough about the program to rate it.

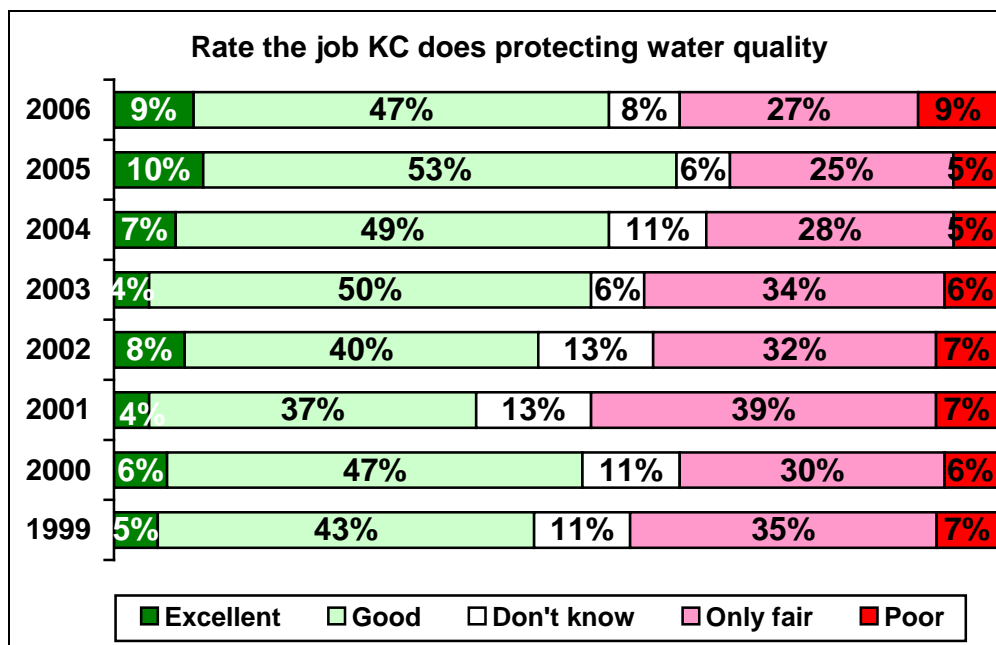


Water Quality in King County

Resident Ratings of the County

Resident rating for the job King County does protecting water quality (56% positive / 36% negative) was consistently improving until this year.

- The ratings for water quality in 2006 have dropped back to levels similar to 2004.
- At the same time, ratings for the last three years are statistically similar.



Water Quality Education

When asked how the county can improve its efforts to protect water quality, the top response continues to be “education/increase awareness.”

How could King County improve its efforts to protect water quality throughout the county?

	1999	2000	2001	2002	2003	2004	2005	2006
Education/Make people aware	19	16	18	21	22	14	21	14

- The “Don’t Know” response (40%) continues to be a significant proportion of the answer to this open-ended question.

- Nearly two respondents in ten (18%) gave an answer coded into the “other” category. These items total less than 1% of the total mentions and do not fit into a combinable category.

(Education/Awareness)	14
(Better enforcement of laws/higher fines)	6
(Better storm water/runoff water management)	5
(Tougher environmental laws)	4
(Doing a good job now)	3
(Limit development)	2
(More research)	2
(Pesticide control/Contamination)	2
(Spend more money/higher priority)	1
(OTHER)	18
(Nothing)	5
(Don't Know/Refused)	40

Watersheds

When asked, a majority (55%) cannot name the watershed they live in.

- When asked what watershed they live in, half (55%) say they don't know.

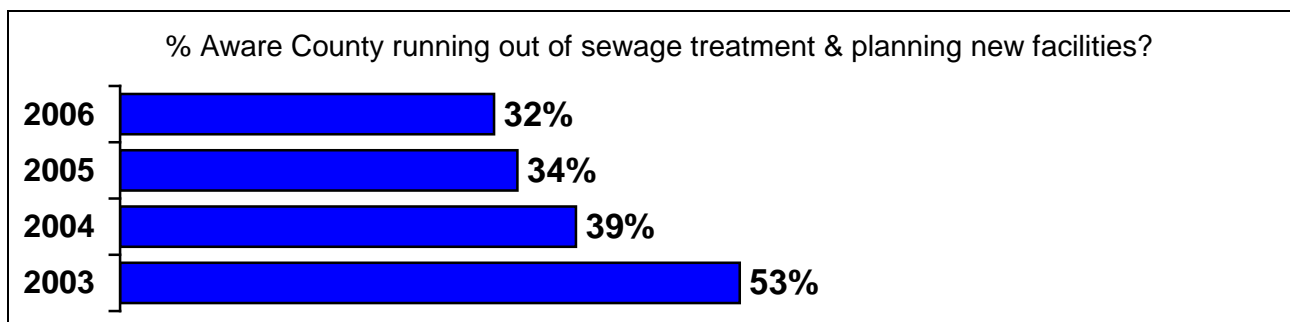
As you may know, a watershed is an area of land that drains water to a central outlet. Can you tell us what watershed you live in?

	1999	2000	2001	2002	2003	2004	2005	2006
Cedar/Cedar River	8	10	12	12	14	8	12	11
Sammamish	-	-	1	1	1	1	1	5
Seattle	-	-	-	-	-	-	-	4
Tolt River	2	5	3	3	2	3	3	3
Green River	2	4	3	3	1	3	3	3
Snoqualmie	-	-	-	-	-	1	2	3
Puget Sound	2	2	1	1	2	2	1	2
Piper's Creek	-	2	2	1	1	1	-	2
Lake Young	-	2	2	1	3	2	1	1
Soos Creek	2	1	1	2	2	-	-	-
King County	-	2	1	1	1	-	-	-
Other Mentions	20	-	8	18	18	10	17	12
Don't know	64	71	62	54	50	61	59	55

Sewage Treatment Facilities

Though awareness of King County running out of sewage treatment capacity remains well below the high level from 2003 (53%), an overwhelming majority (80%) continue to be concerned about the County running out of treatment capacity.

- A majority of residents (68%) are not aware that the county is running out of sewage treatment capacity and planning for new facilities. A third (32%) are aware, which is statistically unchanged from 2005.



- The question about resident concern over sewage treatment capacity was changed in 2005. A comparison of the different version is shown below.

2003 and 2004 Version

Does it concern you that either sewage overflows and backups could occur or that new building permits could be halted if King County runs out of sewage treatment capacity?

	<u>2003</u>	<u>2004</u>
Yes	83	73
No/(Don't Know)	17	26

2005 and 2006 Version

Are you concerned or not concerned that sewage overflows and backups could occur and that new building permits could be halted if King County runs out of sewage treatment capacity?

	<u>2005</u>		<u>2006</u>
Extremely Concerned	44		37
Somewhat Concerned	37	=> 81	43 => 80
Not Concerned	14		18
Don't Know/Refused	5		2

Biosolids

A proportion of residents supports each of the three potential uses for biosolids, and a majority say they are likely to use a topsoil containing biosolids in their landscaping or garden.

- In 2005, the introductory question about biosolids was edited for clarity and uniformity of answers. The two version of the question are below:

2004 Version

Now I would like to ask you a question about biosolids. The nutrient-rich, organic solids that are recovered from wastewater and then treated are called biosolids. For many years, King County has been safely recycling biosolids as a fertilizer and soil amendment for agricultural and forestry uses and as an ingredient in compost. Of the following, which do you think would be the best use of biosolids and compost to help improve soils, water quality and habitats?

Make more compost available for home and garden use	10
Use for land reclamation and soil improvement projects	28
Continue to use in agriculture and forestry	37
(All of the above)	13
(None of the above/Don't Know)	12

2005 and 2006 Version

Now I would like to ask you a few questions about biosolids. In our area, storm water and sewer water from homes is cleaned at treatment plants. During the process, nutrient-rich, organic solids are recovered and treated to make a product called biosolids. For many years, King County has been safely recycling biosolids. Of the following, which do you think would be the best use of biosolids?

	2005	2006
Use in compost or topsoil for landscaping and home gardens	20	19
Use for restoring land without vegetation, such as gravel pits	26	34
Use in agriculture and forestry	35	26
(All of the above)	9	8
(None of the above/Don't Know)	8	12

- There is a small increase in the percentage choosing biosolids for land restoration, and a small decrease for use in agriculture and forestry.

- In 2005, a question about likeliness to purchase a biosolids product was also changed. The two versions of the question are shown below:

2004 Version

Using a scale of very likely, somewhat likely, not that likely and not at all likely, if a biosolids soil mix or compost was available in bags, for a competitive price at a local garden center, how likely would you be to buy and use it?

Very likely	28	
Somewhat likely	27	=> 55
Not that likely	18	=> 40
Not at all likely	22	
(Don't know)	4	

2005 and 2006 Version

Some biosolids are composted or mixed with other materials to create products for landscaping and home gardens. Using a scale of very likely, somewhat likely, not that likely and not at all likely, how likely are you to use compost or topsoil containing biosolids in your landscaping or home garden?

	<u>2005</u>	<u>2006</u>
Very likely	26	24
Somewhat likely	34 => 60	28 => 52
Not that likely	14 => 36	12 => 42
Not at all likely	22	30
(Don't know)	3	6

- There is a noticeable decline in the percentage of residents who say they would use biosolids since 2005. The net shift away from using biosolids is 14 percentage points, a significant change.
- One possible explanation, which appears in a subsequent question, is that this survey was conducted during a national e-coli outbreak. This may have impacted participant opinions about biosolids.

Reclaimed Water – Support For and Resident Acceptance Of

County residents overwhelmingly support reusing as much wastewater as possible.

- The results of this question indicate strong support among residents for King County using as much reclaimed water as possible.

Changing subjects, I'd like to ask you about reclaimed water. King County collects wastewater from sewers. Some of this water will soon be sent to a new treatment plant that has the ability to treat this water to near drinking water quality. This water is called reclaimed water.

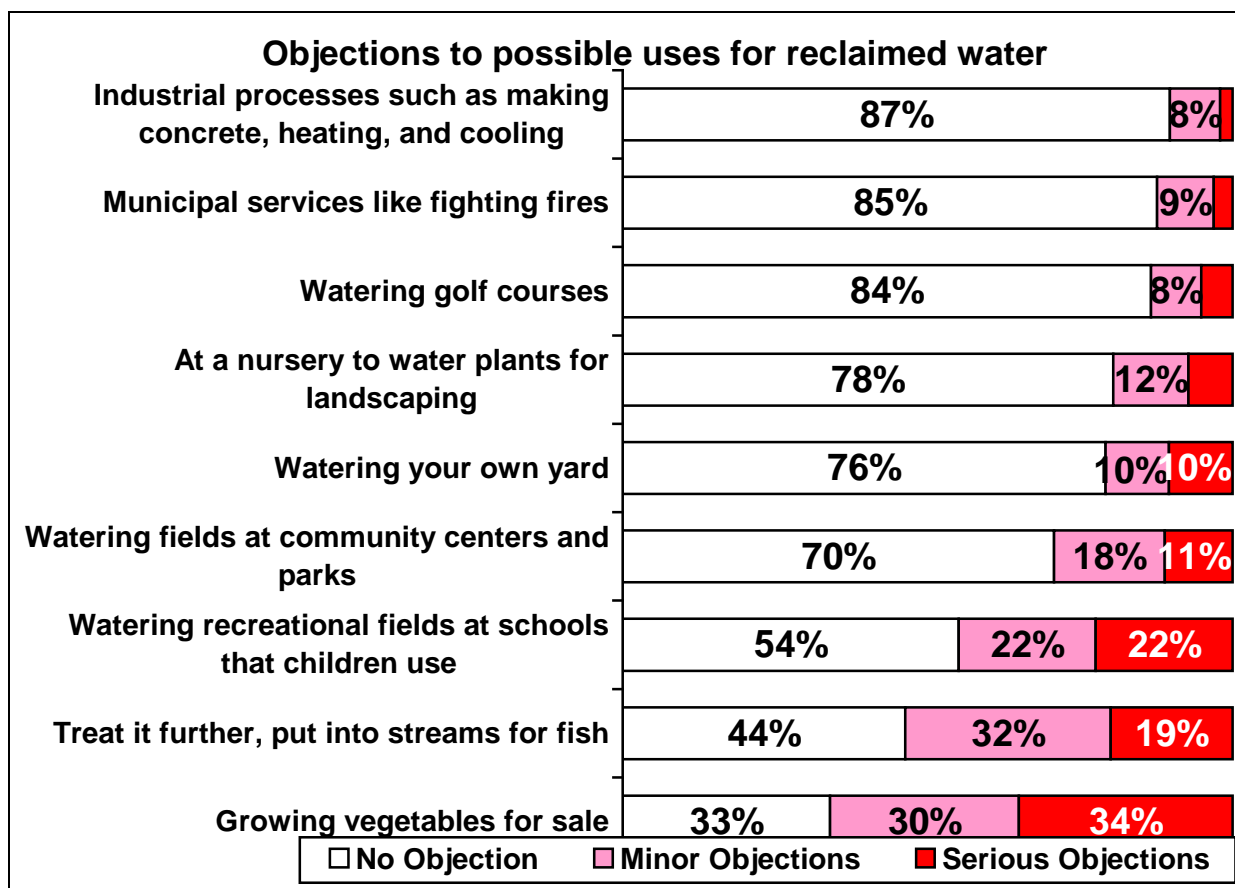
Although it is not suitable for drinking, reclaimed water can be used for a variety of purposes.

In general, would you like to see King County reuse as much of this water as possible, or should King County not make an effort to reuse this water? (IF UNDECIDED) Well, do you lean towards reusing as much as possible or towards not making an effort to reuse this water?

	<u>2005</u>	<u>2006</u>
Reuse as much of this water as possible	79	81
(Lean reuse as much as possible)	3 => 82	1 => 82
Not make an effort to reuse this water	11	11
(Lean not make an effort to reuse this water)	1 => 12	1 => 12
(Undecided/Doesn't Matter)	6	6

- As in 2005, there is overwhelming resident support for a reclaimed water program.

- Residents are then asked a series of questions about specific potential uses for reclaimed water to help identify potential markets for reclaimed water, and identify those uses for reclaimed water that might need additional education.



- As with the questions from 2005, the 2006 results provide useful information on potential market sizes for products that use reclaimed water.
 - As in 2005, there are a wide variety of uses for reclaimed water that a strong majority of residents (at least 70%) have no concerns with.
 - A new item, treating water further and putting it into streams to increase flows for fish, has among the lowest level of “no objection” (44%) of the items tested. However, it also has the highest level of “minor objection” (32%).
 - Acceptance of using reclaimed water at a nursery and for growing vegetables have both declined since 2005. The shift is particularly noticeable for growing vegetables; those with serious objections to this use are now a third (34%) of all respondents.

- There are also more serious objections to watering recreational fields that children use in 2006 (22%, vs. 16% in 2005).
- It is likely that most of the increase in objections can be attributed to the e-coli outbreak.
- As in 2005, women are more likely to object to the various uses for reclaimed water than men.
 - More than a third (38%) of women have serious objections to using reclaimed water for growing vegetables while

Resident questions about reclaimed water center on what it might leave behind.

- Following the “objections” section, residents are asked what questions they have about the use of reclaimed water. The questions posed by respondents are highly informative as to their concerns about the use of reclaimed water. Though residents have been given a basic explanation of what reclaimed water is, the answers to the “objection” series and the open-ended “questions about reclaimed water” series show that a “basic” definition of reclaimed water may not be enough for many residents to be completely comfortable with its use.

What questions, if any, do you have about the use of reclaimed water?

	<u>2006</u>
Is it really safe? / Is it clean?	7
Purity of the water / What components are retained/filtered?	6
Water treatment / What was the process for treating it?	5
Safety Standards / How is it tested? / What's the procedure to ensure it really is free of harmful matter?	5
Usage / Where is it used? / How much is being used?	3
The health issues that might arise / Potential risks	3
What were the chemicals involved in the process?	2
Will it get into the water table? / Contaminate underground water?	2
How much does it cost?	2
How does it compare to drinking water?	2
None / No questions	54
Other	8
Don't Know / Refused	3

- Though all respondents were given the opportunity to answer this open-ended question, more than half (54%) said they have no concerns with the use of reclaimed water.
- The concerns expressed by those that were able to are specific and technical.

Residents can see a variety of benefits to using reclaimed water.

- An open-ended questions shows that residents see a variety of benefits.

What do you think are the benefits, if any, of using reclaimed water?

	<u>2006</u>
Conservation / Helps save fresh water for drinking	23
Recycling / Reclaimed water can be used for many different things	18
Less waste of water / Less clean water consumption	12
Loosen demand on water supply / Helps the environment	10
Helps during summer months / Decrease water shortages	5
Lower cost of water / Saves money	4

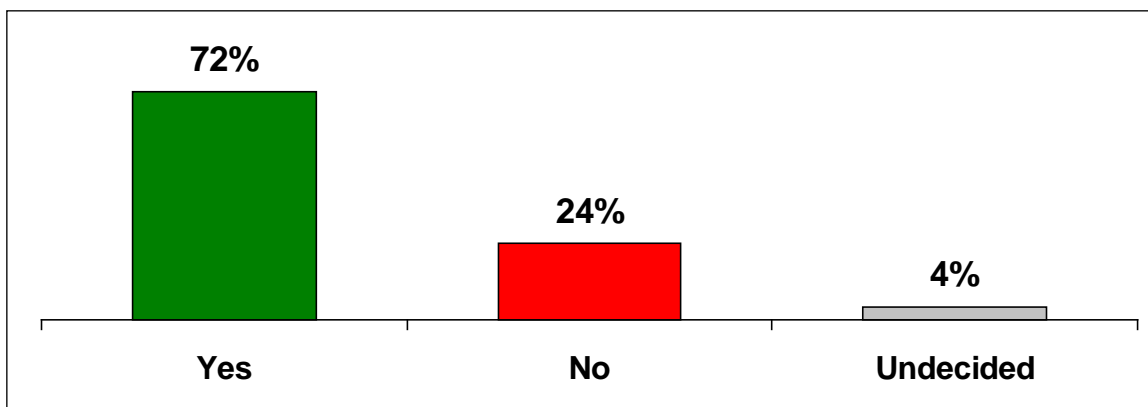
Though an overwhelming percentage (82%) think they County should use as much reclaimed water as possible, a smaller percentage (59%) say they would be more likely to use a business or buy a product if they used reclaimed water.

- A quarter (26%) of County residents say they would be much more likely to use a business or buy a product that used reclaimed water. An additional third (33%) say they would be somewhat more likely.

A strong majority (72%) of County residents say they would be willing to pay one dollar more a month on their sewer bill to help build a reclaimed water system, and residents would pay almost \$3 (\$2.92) for a voluntary program.

- Only a quarter (24%) say they would not be willing to pay a dollar more to help build the system.

Right now, there is enough money to build the major service lines to get reclaimed water to parts of King County. Service lines to bring reclaimed or recycled water to individual users like businesses, golf courses, and factories do not exist yet. Would you be willing to pay one dollar more per month on your sewer bill to help build this system, yes or no?



- Seattle residents are the most likely to support this idea (76% Yes / 21% No).
- South King County residents (74% Yes / 23% No) are just as likely as all residents to support the idea.
- East King County residents are least supportive (62% Yes / 32% No).
- Following this question, respondents are asked what they might pay if this program were voluntary.

What if this program were voluntary, that is, you could choose to pay more on your bill to support building this system. How much would you choose per month to pay to help build this system?

- Almost a third (30%) of respondents said they would not pay anything on their bill; slightly higher than the quarter (24%) who said “no” in the previous question. An additional 12% refused to answer the question.

- The “mean” or average dollar amount from all responses is around \$3 a month (\$2.92).

Sewage and Stormwater – Willingness to Pay

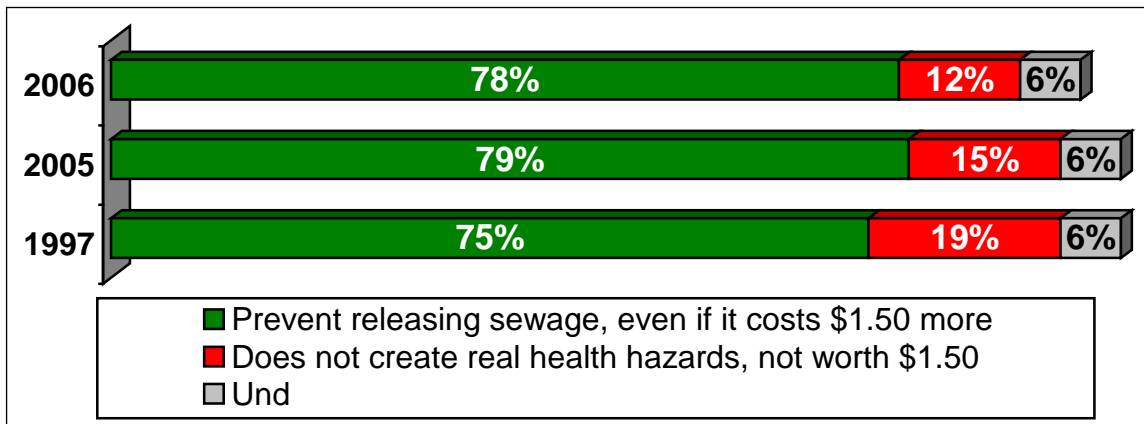
More than three-quarters of residents (78%) are willing to pay \$1.50 per month on their sewer bill to reduce sewage/stormwater releases into Puget Sound.

In some areas of King county, sewage and stormwater travel through the same pipes. During heavy rains, this combination of sewage and stormwater can overflow into Puget Sound and other waterways because sewer pipes are full. This can happen up to 100 times per year, during our heavier storms. We will soon pay about a dollar and fifty cents more per month on our sewer bills to reduce the occurrence of these releases, but this will not eliminate the problem. Which of the following comes closest to your opinion?

We should prevent releasing this diluted sewage into Puget Sound rivers and lakes during storms, even if it costs \$1.50 more per month on our sewer rates

OR

Some people believe releasing some diluted sewage into Puget Sound rivers and lakes during storms does not create any real health hazards for people or wildlife. It is not worth \$1.50 more per



- Seattle (82% for \$1.50) and South King County (86% for \$1.50) residents are noticeably more supportive of the charge than East King County residents (67% for \$1.50).

APPENDIX A: DEMOGRAPHICS

	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>
Gender								
Male	48	48	48	49	50	49	49	50
Female	52	52	52	51	50	51	51	50
Homeowner								
Own/buying	72	66	72	69	72	77	68	71
Rent	28	32	27	29	27	21	28	28
(DK/Refused)	2	2	1	2	1	1	4	1
Children living at home								
Yes	31	36	32	33	27	33	38	34
No/(Refused)	69	64	68	67	73	67	62	66
Age								
18-24	8	10	8	8	7	6	8	8
25-29	6	9	10	9	7	6	9	9
30-34	9	10	8	9	10	10	11	11
35-39	10	11	8	8	10	11	9	9
40-44	13	12	12	12	8	11	12	13
45-49	14	10	9	10	12	11	10	8
50-54	8	12	11	10	11	11	12	10
55-59	7	6	7	6	9	9	7	11
60-64	5	6	5	3	8	7	4	6
65+	18	13	18	21	16	15	15	13
(Refused)	3	3	3	4	2	1	2	1