Kitsap Peninsula Clean Runoff Collaborative

STORMWATER RUNOFF: PUBLIC ATTITUDES, AWARENESS AND BEHAVIOR

November 2008

ELWAY RESEARCH, INC.

Kitsap Peninsula Clean Runoff Collaborative

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INTRODUCTION

This report summarizes the results of a random-sample telephone survey conducted by Elway Research for the Kitsap Peninsula Clean Runoff Collaborative, a group of the local city and county departments that manage stormwater runoff on the Peninsula. Members of the Collaborative are working to comply with requirements set forth in the Western Washington NPDES Phase II Municipal Stormwater Permit, and results of this survey are intended to serve as a baseline against which future behavior change can be measured. The survey interviewed Kitsap Peninsula residents to assess their awareness, attitudes and behaviors with regard to local water quality.

The behaviors that have the potential to produce polluted runoff included:

- Lawn care practices (use of chemical and organic fertilizers, pesticides and herbicides) and typical ways of dealing with yard waste.
- Methods for cleaning outdoor impervious spaces (decks, pavement.)
- Vehicle washing practices, where it is done and what happens to the wastewater.
- Disposal of any vehicle fluids (used oil and antifreeze, spills and leaks.)
- Disposal of dog waste.

The awareness and attitudes questions included:

- What respondents think happens to runoff water.
- What they have seen or heard about reducing runoff pollution.
- How significant they believe the impact on local water is from various household and construction sources (yard chemicals, pet waste, septic care, soil erosion, etc.)
- How effective they think certain changes would be (proper yard waste disposal, car washing on gravel, putting pet waste in the garbage, natural lawn care, septic system maintenance, and use of environmental cleaning products.)

Demographic information was also collected in order to profile those with certain opinions and practices.

Organization of this report

This survey was conducted in two stages. The first stage was a random-sample of 400 heads of household in the overall study area. The study area includes the Kitsap County, including Bainbridge Island, plus Gig Harbor. This sample produces a representative sample of the study area, with an overall margin of sampling error of ±5%.\

This report focuses first on 400 random interviews of the study area. The demographic analysis reported here was undertaken with this base of area-wide data.

The second stage of the study added a supplemental sample in five of the participating communities, plus residents of Navy housing, in order to increase the number of respondents for each jurisdiction.

The findings from the supplemental samples are presented in the second section of the report. Findings from the individual jurisdictions are compared in charts displaying the answers to each question in the survey.

When data for incorporated jurisdictions are discussed in the main report, the supplemental data are included in the analysis, but the data are weighted so that each jurisdiction is represented in its proper proportion.

Table 1
Sample Design

Community	Study Area Base	Added Sample	Total	MOE*
Unincorporated	262	0	262	±6.1%
Incorporated Total	138.	310	386**	±4.9%
Bremerton	43	107	150	±8.1%
Poulsbo	17	58	75	±11.5%
Gig Harbor	10	65	75	±11.5%
Port Orchard	37	38	75	±11.5%
Bainbridge Island	25	50	75	±11.5%
Navy Housing	6	92	100	±10.0%
Total	400			±5.0%

* Maximum margin of error: ±.5% at the 95% confidence interval for the 400 person Peninsula-wide surveys. That is, in theory, had all households been interviewed, there is a 95% chance that the results would be within 5% of the results in this survey. The margins of error for each city, and for demographic sub-groups within the Peninsula base study, grow larger as the sample size gets smaller.

** The total for the incorporated areas was weighted down, to ensure that all the cities were combined in the proper proportion to each other.

METHODS

SAMPLE: 800 Kitsap Peninsula residents, including 400 chosen randomly for use in the base, area-wide data, and over-samples for each jurisdiction to bring their total to at least 75. See Table 1.

TECHNIQUE: Random sample telephone Survey

FIELD DATES: November 8 - 16, 2008

DATA COLLECTION: Calls were made during weekday evenings and weekend days. Trained, professional interviewers under supervision conducted all interviews. Up to four attempts were made to contact a head of household at each number in the sample before a substitute number was called. Questionnaires were edited for completeness, and 10% of each interviewer's calls were re-called for verification.

It must be kept in mind that survey research cannot predict the future. Although great care and the most rigorous methods available were employed in the design, execution and analysis of this survey, these results can be interpreted only as representing the answers given by these respondents to these questions at the time they were interviewed.

Elway Research would like to acknowledge the cooperation of the members of the Kitsap Peninsula Clean Runoff Cooperative in the design of this survey. This survey could not have been done without their assistance and collaboration.

RESPONDENT PROFILE

In interpreting these findings, it is important to keep in mind the characteristics of the people actually interviewed. Table 2 presents a profile of the 400 respondents in the area-wide survey.

Note: Here and throughout this report, percentages may not add to 100%, due to rounding.

Table 2
Area Wide Respondent Profile

GENDER:	49%	Male
	51%	Female
AGE:	11%	18-35
	29%	36-50
	32%	51-64
	28%	65+
	2%	No Answer
EDUCATION:	23%	High School
	5%	Business/Vocational School
	28%	Some College
	31%	College Degree
	12%	Post Graduate
HOUSEHOLD:	24%	Single with no kids
	37%	Couple with no kids
	6%	Single with kids
	31%	Couple with kids
INCOME:	13%	< $25,000
	23%	$25 - $50,000
	18%	$50 - $75,000
	21%	$75,000 +
	26%	No Answer
HOME OWNERSHIP:	70%	Own
	17%	Rent
	13%	No answer
HOME STYLE:	81%	Single house on lot
	9%	Duplex/Multiplex unit on lot
	10%	Apartment/Condo
LOT SIZE:	57%	Half acre or less
	22%	1 – 2 acres
	18%	Over 2 acres
HAVE LAWN/GARDEN	86%	Yes

When comparing results across the various jurisdictions, it is useful to take note of the demographic variation among the cities, and between the incorporated and unincorporated areas of the peninsula (see Table 3). Some of more notable differences include:

- Lot sizes are larger in the unincorporated areas:

  19% of lots in the unincorporated areas were reported to be over 2 acres, compared to

  11% of lots in the cities.

- Bainbridge Island was notable in many categories, including having large lots, the highest incomes, the most college degrees, and the highest level of home ownership:

  17% of respondents from Bainbridge said that they live on 2+ acres,

  36% had annual household incomes of over $75,000,

  70% had at least a college degree, and

  87% owned their own home.

- Bremerton respondents reported relatively low home ownership (62%), and the highest proportion of apartment/condo residents (19%).

- Gig Harbor tied with Bainbridge in having the highest proportion of single family houses (95%). Respondents from Gig Harbor were also the most likely to be living as part of a couple with no children (51%).

- Navy housing residents reported living in the lowest proportion of single family housing units (48%) and lawns/gardens (65%), and the highest percentage of households with children (58%).

Table 3
Respondent Profile by Geographic Area

	Unin-corp	Corp Total	Brem	Bain	Port Orch	Pouls-bo	Gig Harb	Navy Hous
Age								
18-35	8%	9%	13%	4%	10%	4%	7%	**38%**
36-50	29%	24%	23%	22%	27%	21%	32%	34%
51-64	32%	29%	25%	43%	24%	35%	21%	14%
65+	29%	36%	38%	29%	36%	39%	37%	13%
Education								
High School	22%	21%	25%	6%	27%	26%	21%	25%
Bus/Voc	5%	5%	7%	2%	2%	3%	4%	5%
Some College	28%	29%	28%	21%	37%	29%	33%	37%
College Deg	34%	30%	29%	42%	23%	29%	24%	25%
Grad/Prof	10%	14%	10%	**28%**	10%	13%	17%	7%
Household								
Sing/no kids	23%	23%	28%	11%	25%	31%	15%	12%
Coup/no kids	40%	39%	38%	44%	30%	38%	51%	28%
Sing w/kids	7%	7%	8%	5%	8%	6%	3%	3%
Coup w/kids	27%	28%	22%	36%	35%	25%	29%	**55%**
Income								
<$25,000	14%	10%	13%	5%	16%	6%	4%	7%
$25-$50K	23%	25%	32%	11%	29%	19%	20%	36%
$50-$75K	20%	19%	18%	22%	13%	22%	29%	24%
$75,000+	18%	21%	15%	**36%**	20%	19%	25%	13%
NA	24%	24%	23%	26%	22%	32%	21%	21%
Ownership								
Own Home	75%	70%	62%	**87%**	70%	70%	73%	NA
Rent	13%	19%	28%	7%	20%	14%	9%	NA
Home Style								
House on lot	84%	80%	70%	94%	78%	87%	95%	48%
Multi on lot	8%	7%	11%	2%	8%	0%	3%	36%
Apt/Condo	7%	13%	**19%**	4%	13%	13%	3%	17%
Lot Size								
½ Acre -	55%	64%	75%	48%	60%	63%	58%	71%
1/2-2 Acres	26%	22%	14%	34%	21%	22%	27%	17%
2+ Acres	19%	11%	8%	**17%**	14%	12%	11%	10%
Lawn/Garden								
Yes	89%	83%	74%	95%	84%	88%	91%	65%
No	10%	16%	**25%**	4%	16%	10%	9%	**35%**

KEY FINDINGS

- **The great majority of the respondents reported life styles that could pollute water runoff:**
  - 4 in 5 lived in single family houses.
  - Almost 9 in 10 had a lawn and/or garden.
  - Half owned at least one pet dog (1.6 on average, per owner.)
- **They were mostly "do it yourselfers," particularly in the unincorporated areas.**
  - More than 3/4 of those with yards did all the work themselves. The remainder tended to split the yard work, with only 1 in 8 hiring out all their yard care.
  - 2 in 3 washed their own vehicles at least some of the time.
- **For the most part, respondents reported "doing the right thing" with yard chemicals:**
  - More than half of those that do the yard work themselves said they never use each of the yard products listed (chemical fertilizers, pesticides, and herbicides.)
  - Use of chemical fertilizer was higher among those who hired out yard care (in many instances, the more elderly).
  - The highest product usages were recorded for organic fertilizers.
  - 2 in 3 believed that pesticides and fertilizers from yards were a significant contributor to local water pollution.
  - 3 in 4 thought that natural lawn care was a very effective strategy to protect the environment.
- **Respondents also tended to dispose of yard waste properly:**
  - Half of those with yards said that they compost on their own property (More than half of those who do the yard work themselves).
  - Another quarter said that it was "recycled" (in their words) – put out for curbside pick-up, or taken to the dump.
  - No one reported putting yard waste into a body of water.
  - 2 in 3 believed that composting or recycling yard waste was a very effective strategy to protect the environment.

- **There is room for education in how to clean outside:**
  - About a third said that they "hose down" or pressure wash decks, sidewalks, patios and/or driveways.
  - This proportion was even higher among of those with high incomes.
- **However, very few (2%) used cleaning products outside.**
  - 3 in 4 said that environmentally friendly cleaning products were a very effective way to protect the environment.
- **When all property care is combined, 1/3 of respondents reported a concerning level of undesirable behavior.**
  - The highest level of the property care index included: widespread use of more than one chemical, medium usage of chemicals, hosing or pressure washing, and/or very frequent spot use of more than one chemical.
  - The youngest respondents (18-35) and men scored worst on the property care index.
  - Women, respondents over age 65, and those with the lowest incomes (<$25,000) were least likely to report such high levels of undesirable grounds-care practices.
- **Proper care of pet waste presents another challenge:**
  - Only 1 in 3 respondents thought that "pet waste left on the ground" was a significant contributor to local water pollution; just 10% more thought that "putting pet waste in the garbage" was a very effective strategy. These were two of the lowest such items rated.
  - Only 1 in 3 dog owners dealt with the dog waste perfectly (always picked it up if walking the dog, cleaned their own yard daily, and put the waste in the garbage.)
  - Dog owners fell short mostly by not cleaning up their own yard daily (only half said that they did; more cleaned up while walking.)
- **The youngest respondents may be more likely to leave pet waste on the ground:**
  - Only 1/4 of dog owner's ages 18-35 dealt with dog waste perfectly, compared to nearly 40% of older respondents.
  - The youngest respondents were also least likely to believe that leaving pet waste on the ground was a significant contributor to local water pollution and that putting pet waste in the garbage would be very effective.
  - However, the sample size for the youngest group was small, so care must be taken with these numbers.

- **Since almost everyone owned a car, improper car care practices were more prevalent:**
  - 1 in 4 respondents overall allowed car wash water to get into the storm drain. (They said that it either goes directly "into the drain" or "in the street.")
  - Only 1 in 3 considered "soapy water from washing cars on pavement" to be a significant contributor to water pollution. This was the second lowest rating of the pollution contributors tested.
  - Respondents were equally divided on the question of whether charity car washes should be restricted or left alone.

- **A quarter reported several unfavorable practices that could introduce car fluids into the storm system.**
  - This included some combination of leaving or hosing off oil spills, not checking for leaks, and/or not disposing of used oil and/or anti-freeze properly.
  - These proportions again rose within the younger respondents.

- **2 in 5 said they had heard or seen something in the past year about ways that people could cut down local water pollution.**
  - Several undesirable behaviors were less prevalent among those who remembered a water pollution message, including the use of yard chemicals, and, to a lesser extent, improper treatment of car fluids and car wash water.
  - Unfortunately, the youngest respondents were somewhat less likely to recall any such messages.
  - Having heard a water pollution message had no impact on dog waste disposal behaviors.

- **Only half knew that water from storm drains is not treated.**
  - The others were split between thinking that it was treated, and just not knowing.
  - The youngest respondents again stand out as being less likely than others to know that the water is not treated.
  - Having heard some water pollution message in the past year bore no relationship to the propensity to know the fate of storm drain water.

SUMMARY OF FINDINGS

WHO, WHAT AND WHERE OF YARD CARE

As seen in the Respondent Profile, these Kitsap residents predominantly:

- Had lawns and/or gardens (86%).
- Lived in single family houses on lots (81%).

Most of the lots were a half acre or less (57%); however, many were larger:[1]

22% overall said that they lived on ½ -2 acres.

18% lived on over 2 acres.

Among respondents with lawns/gardens, almost 9 in 10 said that they take care of the yard themselves, at least part of the time. (See Table 4):

- Most always took care of their own lawn/garden (71% of the total with yards, 77% in the unincorporated areas, 58% in incorporated).
- Residents in cities were almost twice as likely as those in the unincorporated county to hire at least some of their yard work done (41% vs. 23%)
- A small minority hired out all of their yard work (13% overall).

Table 4
Lawn and Garden Care

WHO TAKES CARE OF LAWNS	Total	Unincorp	Incorp
Resident only	71%	77%	58%
Resident plus hired	16%	12%	24%
Hired only	13%	11%	17%
Net Some Self Care	87%	89%	82%
Net Some Hired	29%	32%	41%

[1] The proportions among the total were slightly larger than those with lawns, as the total includes those living in multiplexes, presumably on large, often paved plots.

Interestingly, respondents with the smallest lots were most likely to rely solely on hired care (see Table 5):

14% of those living on a half acre or less hired out all their yard care, compared to

7% of respondents with 1/2-2 acres, and

8% of those living on over 2 acres.

It could be that the larger lots are more often left in a natural state (pastures and woodlands), and/or, as in the case with multiplexes, include more pavement.

Additional variation in lawn care practice is seen with age: the oldest respondents were 4 times as likely as the youngest respondents to hire out all of their yard care. Those hiring all work out included:

24% of respondents age 65+,

12% of those ages 50 to 64, and

5% of respondents under 50.

It may be because of this age variation that a paradoxical variation is also seen with income: those who reported the lowest household incomes were also the most likely to hire out all of their yard work. These are probably retirees:

29% of those with under $25,000 hired out all of their yard work, as did

16% of respondents with $25,000 to $50,000 in income,

4% with $50,000 to $75,000, and

13% with annual incomes of over $75,000.

Table 5
Variation in Lawn Care

	Lot Size		
LAWN/GARDEN CARE:	**½ Acre or less**	**1/2-2 Acres**	**Over 2 Acres**
Resident only	72%	72%	79%
Resident plus hired help	14%	20%	13%
Hired help only	14%	7%	8%
	Age Group		
	< 50	**50-64**	**65+**
Resident only	70%	66%	59%
Resident plus hired help	10%	21%	16%
Hired help only	5%	12%	24%

Yard Chemical Use Limited

When asked about the use of a series of products on their gardens/lawns, most respondents with yards consistently said that they never used those products. This proportion was highest among those who take care of their own yards. Those who hire out were less likely to know for sure. (See Table 6).

Pesticides were least used:

74% of all those with yards and

79% of those who care for their yards solely on their own reported never using pesticides widely;

63% and 67%, respectively, never used them even in spots:

For the remainder of the products investigated, about half of all those with yards said they never used them. Otherwise, usage generally ranged from 1–2 times a year ("several times a season") to yearly, with only 5% or fewer using any products weekly.

Most said they never did the following:

- Wide-spread chemical fertilizer use (52% of all with yards; 59% who take care of the yards themselves.)
- Spot use of chemical fertilizer (57% and 53%).
- Wide-spread use of herbicides (54% and 59%).
- Spot use of herbicides (56% and 61%).
- Wide-spread use of organic fertilizer (53% and 59%).
- Spot use of organic fertilizer (52% and 58%).

Respondents who hire out yard care often were not sure what was done. They were also more likely to have their yards treated widely with chemical fertilizers. Wide-spread chemical fertilization was reported by:

38% of those who never hire yard care, as compared to

48% of those who do so some of the time, and

52% of those with yards who never care for them themselves,

Table 6
Lawn Care by Worker Responsible

	TOTAL	CARE OF YARD Self	Self +Hire	Hire
Chemical Fertilizer Wide Use				
weekly	1%	1%	4%	0%
1-3/year	42%	38%	48%	52%
never	52%	59%	41%	32%
Not Sure	5%	2%	7%	16%
Chemical Fertilizer Spot Use				
weekly	4%	4%	9%	2%
1-3/year	34%	32%	41%	39%
never	57%	63%	41%	43%
Not Sure	5%	2%	9%	16%
Pesticide Wide Use				
weekly	1%	2%	0%	0%
1-3/year	19%	16%	28%	30%
never	74%	79%	63%	55%
Not Sure	6%	3%	9%	16%
Pesticide Spot Use				
weekly	2%	2%	0%	5%
1-3/year	30%	28%	37%	27%
never	63%	67%	56%	52%
Not Sure	6%	3%	7%	16%
Herbicide Wide Use				
weekly	2%	2%	0%	5%
1-3/year	38%	36%	43%	43%
never	54%	59%	48%	39%
Not Sure	5%	3%	9%	14%
Herbicide Spot Use				
weekly	3%	3%	4%	2%
1-3/year	36%	34%	39%	39%
never	56%	61%	50%	43%
Not sure	5%	2%	7%	16%
Organic Fertilizer Wide Use				
weekly	3%	3%	4%	5%
1-3/year	35%	33%	52%	30%
never	53%	59%	31%	45%
Not sure	8%	5%	13%	20%
Organic Fertilizer Spot Use				
weekly	5%	4%	11%	5%
1-3/year	34%	32%	46%	30%
never	52%	58%	31%	45%
Not Sure	9%	6%	11%	20%

Yard Waste Disposal Also Well Managed

Yard waste was typically said to be composted on the property and/or put out for pick-up (composted elsewhere). (See Table 7). This was true regardless of who does the work:

- Half of all of those with yards (49%) said that they compost on their own property. This drops from
  56% of those who do the work themselves, to
  46% who do some and hire some, and
  30% of those who hire out all their yard work.
- A fifth overall (19%) "recycle"/put it out for curbside pick-up.
- No one said that they put yard waste in surface water.

Pavement Cleaning Predominantly Proper

Most respondents swept (50%) and/or used a blower (30%) on outside hard surfaces such as decks, driveways, and patios. Very few (2%) used cleaning products outside.

- Some did clean outside surfaces areas in ways that impact runoff water, however, including:
  19% overall who "hosed them down," and
  15% who pressure washed.
- Those cleaning with water tended to have higher incomes:
  38% with household incomes over $75,000 hosed down outside surfaces, vs.
  14% of those with lower incomes.
  18% of respondents making over $50,000 used a pressure washer, vs.
  12% of those with lower incomes.

Table 7
Yard Waste Disposal, by Worker Responsible

	TOTAL (342)	CARE OF YARD		
		Self Only (242)	Self +Hire (54)	Hire Only (44)
Compost on Property	49%	56%	46%	30%
Recycle/Curb Side Pick-up	19%	16%	28%	23%
Put in Garbage	10%	9%	13%	11%
Take to Dump	6%	9%	5%	5%
Burn	3%	3%	0%	5%
Put in Woods	2%	3%	0%	0%
Take to Drop Box	1%	1%	0%	2%
Put in Ditch	1%	1%	2%	0%
Put in Water	0%	0%	0%	0%
Do Nothing	2%	5%	0%	7%
Not Sure	3%	1%	6%	5%

Elderly Exemplary

When all the outside care is combined into a single index[2]:

- A third of the respondents (35%) reported very low/zero undesirable grounds-care behaviors. At the most, they might use one chemical product very infrequently, and only in spots.
- Another third (33%) acknowledged a medium amount of undesirable yard-care practices, such as using several chemicals in spots several times a year, or 1-2 chemicals widely, but not often.
- The final third (32%) reported a high number of practices such as widespread use of more than one chemical, at least several times a year. Others used one chemical widely and very often. Some hosed or pressure washed their paved outside surfaces as well as using multiple or frequent chemicals.

[2] The details of the construction of this index can be found in the appendix.

These behavioral levels varied demographically as seen previously:

- The highest level of undesirable behaviors were most likely to be reported by the youngest respondents, while
- Seniors and those with the lowest incomes more often reported better behavior overall. (See Table 8.)

  44% of respondents ages 18-35 reported high levels of detrimental yard-care practices, compared to 32% of those older.

  49% of those with incomes under $25,000 reported virtually no runoff-contaminating yard-care behaviors.

Another demographic variant in this case was gender:

39% of men admitted to high levels of unfavorable yard care practices, vs.
26% of women.

Table 8
Grounds Care Index, by Demographics

Level of Undesirable Yard Care	Total	Age Group			
		18-35	36-50	50-64	65+
N=	(208)	(42)	(115)	(126)	(10)
Low/none	35%	29%	38%	28%	41%
Medium	33%	26%	28%	42%	30%
High	32%	44%	34%	30%	29%
		Income Group			
	Total	<$25K	$25-50K	$50-75K	$75K+
N=	(208)	(51)	(92)	(71)	(21)
Low/none	35%	49%	34%	30%	23%
Medium	33%	27%	26%	42%	36%
High	32%	24%	40%	28%	40%

PET WASTE DISPOSAL "SPOTTY"

Half of the area-wide respondents (52%) said that they have at least one pet dog. This proportion was roughly the same in the unincorporated county (54%) as in the cities (49%), as was the number of dogs (1.6 on average per owner, or 0.82 dogs per all households).

The prime "dog owning years" were 36–50, and the modal income over $75,000:

70% of respondents age 36-50 said that they have at least one dog, vs.
45% of those ages 18-35,

56% of those ages 50-64, and
34% of that age 65 or older.

62% of respondents with incomes over $75,000 had at least one dog,
vs.
49% of those with less income.

Among dog owners, waste disposal is rarely dealt with perfectly:

- A third (34%) left pet waste while walking, at least some of the time:

  17% mostly picked it up,
  10% mostly left it, and
  7% always left it.

- Only half (47%) cleaned the waste from their own yard daily. Others picked it up weekly or less often:

  23% cleaned the yard weekly,
  6% cleaned it 2x/month or less often, and
  20% of dog owners never cleaned the waste from their own property.

Among those who picked up the waste, 2 in 3 (63%) disposed of it properly, in the garbage. Otherwise:

12% composted it on their own property.
8% put it in the yard waste bin.
4% flushed it,
4% buried it, and
4% just tossed it.

Combining all of these factors into a single index indicates that just 1 in 3 dog owners (37%) always dealt with their pets' waste properly: did not ever leave it while walking, cleaned it from the yard daily, and did not just "toss it" after cleaning.

The youngest and the higher income respondents were most imprudent about cleaning up. Those who did not always take care of the dog waste properly included:

74% of the dog owners ages 18-35, compared to
60% to 63% of older dog owners.
77% of dog owners with incomes of $50-$75K and
71% with incomes over $75K, compared to
53% - 58% of the less wealthy.

Caution is advised with these numbers, as the sample sizes are small. However, the consistent pattern lends credence to the findings.

Table 9
Proper Dog Waste Disposal, by Demographics

Always Proper Disposal	Total	Age Group 18-35	36-50	50-64	65+
N=	(208)	(19)	(81)	(26)	(37)
Yes	37%	26%	38%	37%	40%
No	63%	74%	62%	63%	60%
		Income Group			
	Total	**<$25K**	**$25-50K**	**$50-75K**	**$75K+**
N=	(208)	(24)	(51)	(34)	(52)
Yes	37%	42%	47%	24%	29%
No	63%	58%	53%	77%	71%

The number of dog owners with various lot sizes was also small, but somewhat inconsistent. Half of the smallest lot owners pick up dog waste daily, (vs. 38% of those with larger lots), but they were more likely than those with ½ - 2 acres to "just leave it" (22% compared to 11%-- others tended to pick it up weekly). Almost a third of those with 2+ acres "just leave it," leaving the middle-sized lot owners with the best record. The presence or absence of children in the household made no difference.

MULTIPLE OPTIONS FOR CAR WASHING

Most respondents washed their own cars and went to commercial car washes, ranging evenly from 1x/month to 1-2 x/year (see Table 10):

60% washed their own vehicles at least some of the time
(18% monthly, 15% every 2 months, 22% 1-2x/year, 5% less often).

67% went to commercial car washes, at least at times
(22%, 18%, 22% and 6%).

Use of charity car washes was somewhat less prevalent, but still common (48%).

- Respondents tended to go to charity car washes 1-2x/year (21%) or less often (15%).
- A few went monthly (6%) or every 2 months (7%).

Self-washing decreased with age from:

71% of respondents ages 18–35, to
67% of those 36–50,
66% ages 50–64, and
43% of respondents age 65 or older.

Those with the lowest incomes (<$25,000) were the least likely to wash their own cars (36%). Again, these may be retirees, or they may own older cars that they do not believe warrant much washing. Lower income respondents were also less likely than others to go to commercial car washes.

36% of those with incomes under $25,000 wash their own cars, vs.
64% of those with incomes over $50,000.

58% under $25,000 use commercial car washes, vs.
66% over $50,000.

Middle- aged respondents were most likely to go to charity car washes:

53% of those 36-64 reported doing so, compared to
43% of those who are younger and
40% of those older.

However, this apparently is not because they are patronizing their children's fundraisers; the presence of children in the household had no impact on usage of charity carwashes.

Table 10
Car Washing, by Demographics

		Age Group			
	Total	**18-35**	**36-50**	**50-64**	**65+**
N=	(400)	(42)	(115)	(126)	(110)
Ever Self	60%	71%	67%	66%	43%
Ever Commercial	67%	62%	66%	69%	69%
Ever Charity	48%	43%	56%	50%	40%
		Income Group			
	Total	**<$25K**	**$25-50K**	**$50-75K**	**$75K+**
N=	(400)	(51)	(92)	(71)	(84)
Ever Self	60%	36%	63%	70%	59%
Ever Commercial	67%	58%	53%	77%	71%
Ever Charity	48%	45%	46%	46%	47%

Too Much Down the Drain

Combining all the car wash behavior into a single index results in 1 in 4 respondents who allowed some car wash water to end up in storm drains:

15% said that the wash water goes directly down the storm drain.
10% said it went in "the street."

The remainder tended to either go to commercial car washes exclusively or not wash their cars, although 3 in 10 did wash their vehicles on non-pavement, including:

16% on dirt/sand/gravel, and
13% on grass.

Allowing car wash water down the drain was less likely among older respondents (resulting from a combination of less frequent home washing and proper drainage):

40% of 18-35 year olds let car wash water in the storm drain/street, vs.
36% of those 36–50,
25% of respondents ages 50–64, and
9% of those 65+.

Following the pattern of some of the other behaviors, the lowest income respondents also had a low incidence of contaminating with car wash water:

14% of respondents with incomes under $25,000 let car wash water down the storm drain/street. This compares to
28% of those with higher incomes.

Interestingly, respondents with college degrees were far more likely than others to say that their car wash water went in the storm drain or street:

35% of college graduates did so, vs.
18% of those without college degrees.

This may be because the oldest respondents (65+), already shown to not wash cars at home, are least likely to have college degrees.

CAR FLUID DISPOSAL USUALLY RESPONSIBLE

The incidence of reported improper disposal of car fluid is much lower than car wash water problems, although the impact of oil and other fluids in the water system may be more drastic:

- Two of three respondents (64%) said that they always let a shop deal with their car's oil, anti-freeze, and other fluids.
- Of those who changed car fluids themselves at least sometimes, half (51%) took the used fluid to a collection location. A third (29%) of those who changed fluids did not know what happened to it.
- More than half said they would treat a leak or spill correctly, either by putting down a pad (22%) or some other absorbent material (39%). However, 10% said that they would "hose it off," and another 10% admitted that they would do nothing.
- Just under half (47%) said they check regularly for leaks. Others checked sporadically (13%) or were sure that they would notice (33%).

An index for fluid care (Table 11) resulted in findings that:[3]

- More than a third of respondents (36%) reported very low undesirable behaviors with car fluids. If they changed fluids themselves, they disposed of the waste properly, they checked for leaks, and they would treat a leak with a pad or absorbent materials.
- Another 40% reported very few improper practices in this category – usually not checking regularly for leaks.
- The 24% remaining respondents reported 2-3 improper practices with car fluids. This ranged from leaving leaks and not checking often, to pouring used oil down the drain.

[3] See the appendix for the details of the construction of this index.

Table 11
Car Fluid Care, by Demographics

Level of Undesirable Car Fluid Practices		Total	18-35	36-50	50-64	65+
	N=	(400)	(42)	(115)	(126)	(110)
				Age Group		
None		36	36	29	37	42
Very few		40	31	43	40	41
Several		24	33	29	22	17
				Income Group		
		Total	<$25K	$25-50K	$50-75K	$75K+
	N=	(400)	(51)	(92)	(71)	(84)
None		36	25	30	44	46
Very few		40	53	36	42	35
Several		24	22	34	14	19

Once again, improper fluid care decreased with age:

33% of those 18-35 scored high on the index, compared to
29% of 36-50 year olds,
22% of those 50-64, and
17% of respondents age 65+.

However, variation with income did not follow the pattern seen with other behaviors: when it came to car fluid care, the higher income respondents did better:

46% of respondents with income of $75,000+ reported no potentially damaging car-care practices. This went down steadily to

44% of those with $50-$75,000,

30% who reported incomes of $25K to $50,000, and

25% of respondents with incomes of less than $25,000. This last group was most likely to have undesirable car fluid practices (75%).

PET WASTE & CAR WASH WATER ATTITUDINAL CHALLENGES

Pet waste and car wash water were consistently at the bottom of the list of things respondents' thought contributed to water pollution:

- "Pet waste left on the ground" was thought to be a significant contribution to water pollution by only 34%.
- "Soapy water from washing cars on pavement" was considered significant by 36%.
- This compares to most other sources deemed "significant" contributors to water pollution by 2 in 3 respondents, including:

  68% household hazardous waste.
  66% septic systems.
  63% yard chemicals.
  60% oil leaks.
  48% construction site soil erosion.

- "Putting pet waste in the garbage" was thought to be a "very effective way to protect the environment" by only 43%, and
- "Car washing on gravel" was considered so by 36%.
- These also compare to most other behaviors thought to be "very effective" by 2 in 3 or more, including:

  79% Septic system regular inspection and maintenance,
  78% Fixing vehicle leaks,
  76% Environmentally friendly cleaning products,
  73% Natural lawn care, and
  67% Composting or recycling yard waste.

Attitudes among Demographic Categories Are Complex

There is not a clear pattern of attitudinal difference and similarities in the demographic categories. In general:

- Those with college degrees were more likely to rate a factor significant, including:

  72% for yard chemicals (compared to 56% of those without a college degree),

  73% for leaking septic systems (vs. 60% without a college degree).

  75% for improper disposal of household hazardous wastes (vs. 63%).

  67% for oil leaks (vs. 54%).

- College graduates were more in line with others, however, in what they thought "very effective" solutions. The only significant differences in these findings by education were:

  82% of college graduates thought that environmentally friendly cleaning products were very effective, vs.
  63% of those without a college degree.

  37% of those with at least some post high school education thought that washing cars on gravel would be very effective, vs.
  29% of those with no formal education beyond high school.

- Women were more likely than men to rate sources as significant and practices very effective (although their actual behaviors were not often different). Women were more likely than men to rate:
  ~ yard chemicals significant (70% vs. 56% of men)
  ~ natural lawn care very effective (78% vs. 67%)
  ~ vehicle oil leaks significant (66% vs. 53%)
  ~ that fixing car leaks would be very effective (84% vs. 71%)
  ~ pet waste left on the ground significant (41% vs. 27%)
  ~ construction site erosion significant (53% vs. 41%)
  ~ say that charity car washes should be restricted (49% vs. 39%).

- As with behaviors, the youngest respondents often stood out as being more problematic. Among those ages 18 – 35:

  19% thought that leaving pet waste was significant vs.
  36% of those older

  26% believed putting pet waste in the garbage to be very effective, vs.
  45% of those older.

  21% thought washing cars on gravel would be very effective vs.
  37% of those older

  62% vs. 77% said the same about environmental cleaning products,

  60% vs. 75% felt the same about natural lawn care products.

Behaviors Don't Always Match Attitudes

The relationship between "water friendly" attitudes and behaviors was not consistent. Behaviors were more often correlated with strategies thought to be "very effective" than for improving runoff quality than with attitudes:

- Those using various amounts of yard chemicals were equally likely to say that such were significant factors in water pollution. However,

  84% of those who reported very low yard chemical usage thought that natural lawn care products would be very effective, vs.
  74% of those with medium yard- chemical usage, and
  67% with frequent and/or widespread chemical usage.

- Those allowing car wash water down the drain/ street and those who do not were equally likely to say that wash water was significant. However:

42% of those who don't let wash water in the drain/street think that washing on gravel would be very effective. This compares to
33% of those who let car wash water into the storm drain or street.

- Significance of oil leaks related only slightly to undesirable car fluid care.
  63% of those who reported no detrimental car fluid practices said that oil leaks were a significant cause of water pollution, vs.
  54% of those who reported 2-3 practices that might introduce car fluids to runoff.
- The strongest relationship was found with the treatment of dog waste:
  39% of those who always pick up and dispose of dog waste properly, believe that pet waste is a significant problem and 57% think that proper disposal of pet waste is very effective. This compares to
  29% of those who sometimes leave dog waste thinking it a significant problem, and 34% believing that proper disposal would be very effective.

It is interesting that not all of those who "do the right thing" do so because they believe in the environmental significance. Conversely, not all of those who believe in the environmental significance "do the right thing."

In addition, believing the source to be a problem does not necessarily mean that the respondent thought that the suggested solution would be very effective. The finding that there is some relationship, however, indicates that residents can be "nudged" in the right direction.

WORD IS "LEAKING OUT"

Many respondents (40%) said that they had seen or heard something in the past year about ways that people could help prevent pollution of stormwater on the Peninsula.

Those most likely to say that they had heard such a message were:

- Middle aged:
  44% of ages 36-50 and 47% of 50-64, compared to
  34% of those 65+ and
  21% of 18 to 35-year-olds.
- Higher income:
  49% of those with $75K+ and 54% of those earning $50-$75K, vs.
  30% with incomes of $25K to $50K and
  25% of those with incomes of below $25,000.)
- College educated:
  45% with a college degree,
  38% with some post-high school education, and
  32% of high school graduates.

What respondents remembered hearing varied, with the largest single category (car washing) accounting for only 4% of the total. In general, the recollections fell into the following categories:

13% of all respondents heard something directly related to runoff, including about car wash care (4%), not dumping in storm drains (3%), spill/leak clean-up (1%), and/or stormwater collection (1%).

12% recalled hearing about proper disposal of various pollutants, including motor oil (3%), household hazardous waste/chemicals (2%), dog waste (0.5%), paints (0.3%) and/or pesticides (0.3%).

7% mentioned where they saw/heard the message, including "everywhere" (2%), from "the city" (2%), direct mail (1%), the newspaper (1%), and from environmental organizations (1%).

3% remembered something about using organic lawn care products/not over-using other chemicals.

3% said "recycling," which may or may not have actually been related to water pollution.

Behaviors Seem Related to Awareness

Most encouraging is the finding that recall of a message about stormwater pollution was related to behaviors. This is most easily seen with the "indices" of different categories of behaviors that were discussed earlier. However, we cannot be sure if hearing the message made the difference, or if those who are already more environmentally conscience were more apt to remember such a message (see Table 12.)

- Respondents who remembered hearing a water pollution message were less likely to report high levels of undesirable yard care practices (widespread or frequent use of multiple chemicals):

  38% who did not remember any runoff pollution messages scored "high" on the undesirable behavior index, compared to

  24% of those who recalled a message.

- There was a small difference in propensity to let car wash water into the storm drain/street, which was reported by:

  21% of those who remembered a local water pollution message, vs.

  28% of those who did not.

- There were also slight differences in the number of undesirable "car fluid practices" reported:

  19% of those who heard a pollution message acknowledge several bad car fluid practices (leaving spills, not checking for leaks, not taking old fluids in to collection centers.) This compared to

  27% of those who did not recall a water pollution message.

- Hearing a message did not seem to increase dog waste pick-up. Those who did not recall a message tended to pick-up their own yards daily anyway. This is undoubtedly not because of the message, but some artifact of the populations captured by each group and/or a random chance outside the margin of error. It does make clear, however, how resistant residents are to messages about the dangers of pet waste.

Table 12
Behavior Indices, by Exposure to Message

INDICES OF BEHAVIORS	Seen or Heard Message About Water Pollution Yes	No
Undesirable yard care practices		
Low level	36%	34%
Medium level	40%	28%
High level	24%	38%
Any Car Wash Water in Drain/Street	21%	28%
Undesirable Car Fluid Practices		
None	37%	35%
Very few	44%	38%
Several	19%	27%
Always Proper Dog Waste Disposal		
Yes	27%	43%
No	73%	57%

STORM DRAIN SYSTEM KNOWLEDGE STILL LACKING

The greatest education opportunity may be the most general: only about half of all respondents knew that storm drain water ends up in the nearest body of water without being treated.

54% knew that it was untreated,
20% thought that it was treated, and
27% did not know.

Demographic variation in this knowledge is consistent with other findings: Respondents under age 35 were most likely to think that the water was treated:

33% of those under 35 thought so, vs.
23% of those 36-50,
18% of 50-64 year olds and
12% of respondents age 65 or older.

Respondents in unincorporated Kitsap County were better informed on this issue than town/city residents:

58% of those in unincorporated areas knew that runoff water was untreated, vs.

46% in the incorporated areas.

In this case, hearing any messages about local water pollution made no difference. Those who recalled hearing something were just as likely as others to think that run off water is treated.

DISCUSSION

There is a strong base of understanding about water runoff among the residents of Kitsap County and the Peninsula. Many have heard messages already, most are being prudent about lawn products, most do not let car wash water in the storm drains, and the majority pick-up pet waste, at least when they are off their own property.

There is room for improvement, of course. For now, these survey numbers tell us that:

1 in 2 still do not know that stormwater is not treated.

1 in 3 overall may over-use yard chemicals.

1 in 4 risk letting car-wash water down the storm drain.

1 in 4 is less than perfect about taking care with vehicle fluids.

1 in 6 both have a dog and do not always dispose of the waste properly.

Car washing and picking up dog waste may be the behaviors most resistant to change. Respondents were least likely to believe these to be significant contributors to water pollution and least likely to believe that avoiding these behaviors would be effective.

The proportions reporting each behavior are only one aspect of deciding what to target, however. We do not know such details as who lives closer to surface water, whether car wash water in “ditches” drains to the ground or the street, or if the respondents who said that they “didn’t know” what happened to the used car oil have a leaking tub sitting in the garage.

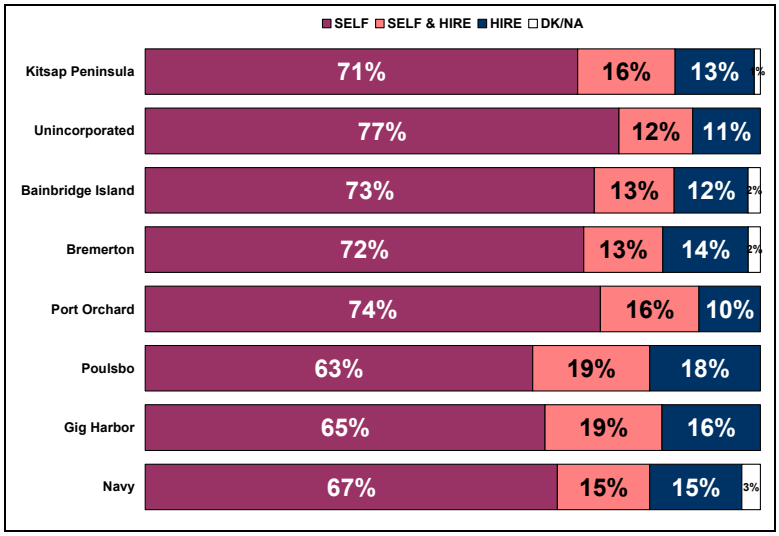
It is clear, however, that the youngest adults should be targeted, no matter what the content of the message. This means choosing a style that appeals to younger residents, as well as media outlets and venues that they frequent. They are the single group that most consistently reported undesirable behavior, as well as the group that was least likely to have heard any of the recent water pollution messages, and least likely to be convinced by suggested strategies for water improvement.

Among older respondents, targeting lawn-care services and those who hire them might be effective; they fertilize more often, and, apparently, with less for-thought, as many who hired their yard work done did not seem clear on what the yard services were doing on their property.

JURISDICTION COMPARISONS

Comparisons between the participating jurisdictions are presented in the following section in the form of annotated graphs. The full results are appended in detailed cross-tabulations.

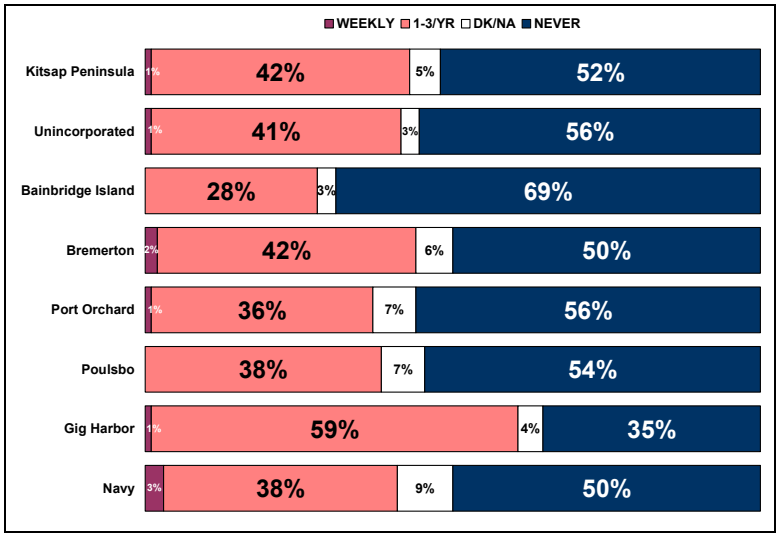
3 in 4 or More in Each Area do Yard Care



Question 5 (Asked of those with lawns or gardens): Do you or someone else in your household maintain the yard yourself? Or do you hire someone to take care of it?

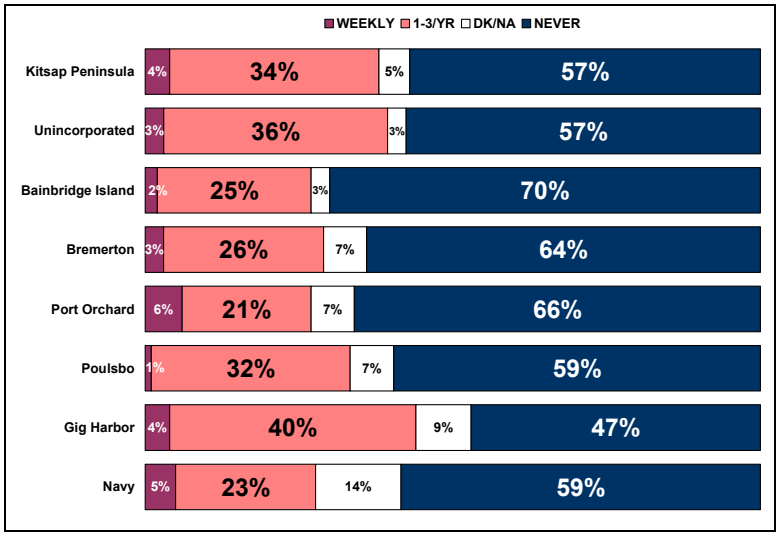
- **Self vs. Hire lawn care did not vary dramatically around the Peninsula:**
  - Respondents in the unincorporated area were most likely to do all of their own yard work (77%).
  - Poulsbo respondents were least likely to do any at all (63%).

Chemical Fertilizer Usually Not "Over Whole Yard"



Question 6: How often are the following products used on your lawn or garden, if at all?
Question 6.1: Apply chemical fertilizer over your entire yard. (Asked of those with yards.)

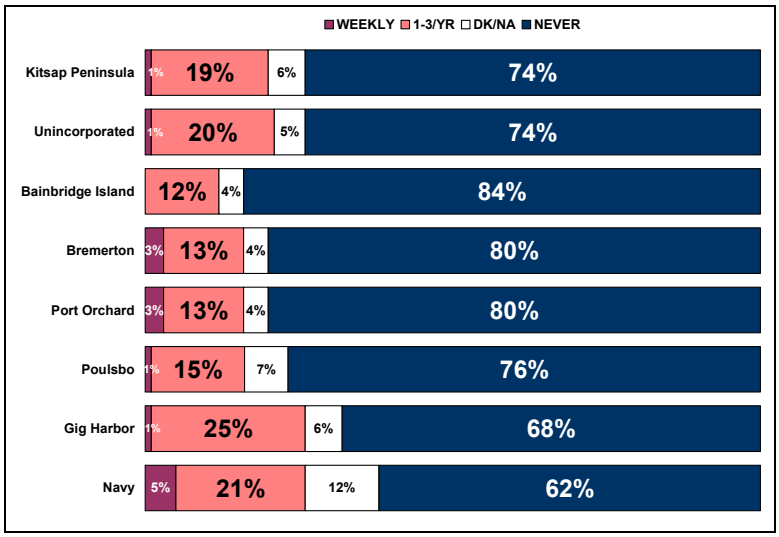
Chemical Fertilizer Used More Often in Small Spots



Question 6.2: Apply chemical fertilizer in small spots where needed. (Base: With Yards.)

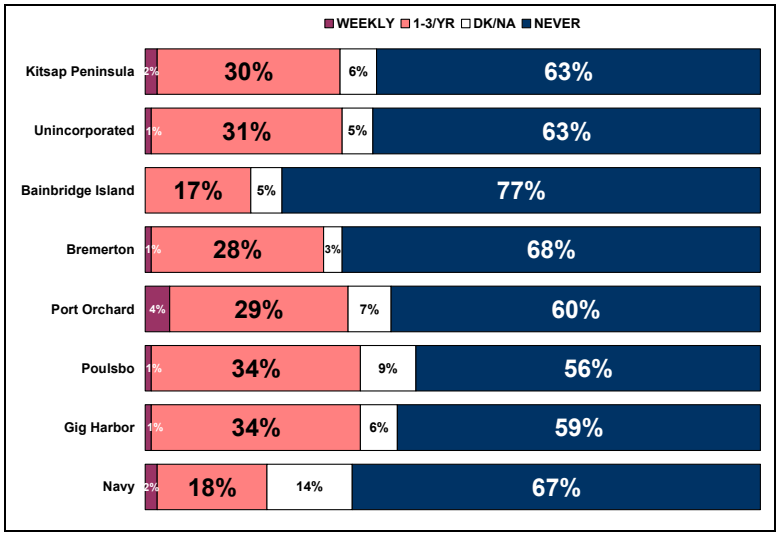
- **Bainbridge Islanders were the <u>least</u> likely to use chemical fertilizer, either over the whole yard (28%, but never weekly) or in spots (27%).**
- **Gig Harborites were <u>most</u> likely: 60% over whole yard; 44% in spots.**

3 in 4 Overall Never Use Widespread Pesticides



Question 6: How often are the following products used on your lawn or garden, if at all?
Question 6.3: Apply chemical fertilizer over a wide area. (Base: Those with yards.)

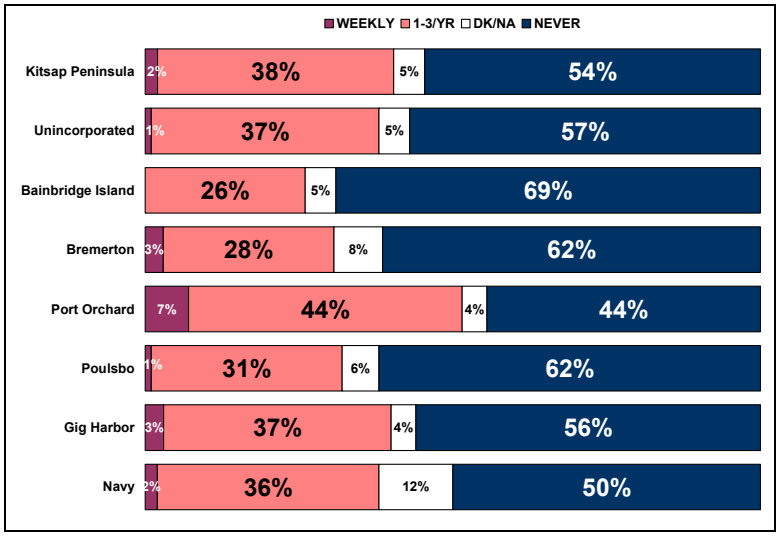
2 in 3 Don't Use Pesticides, Even in Small Spots



Question 6.4: Apply Pesticides in small spots where needed. (Base: Those with yards.)

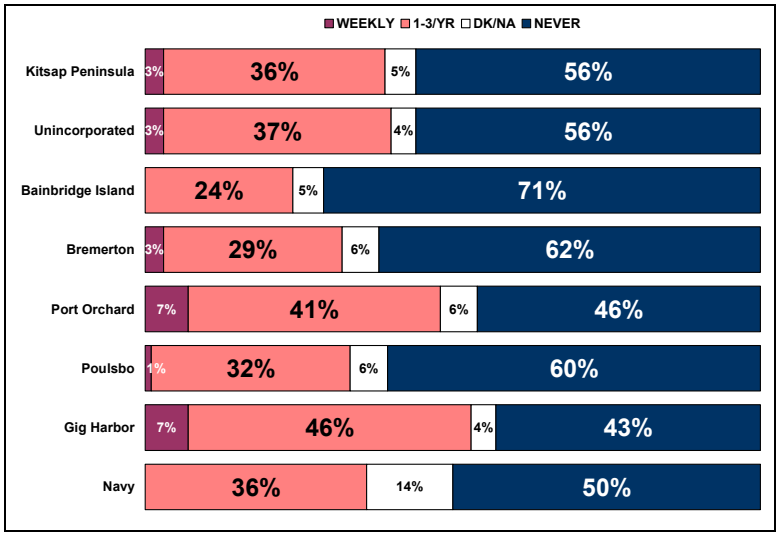
- **Wide-spread pesticide use was particularly high in Gig Harbor (26%) and in Navy Housing (26%).**
- **Bainbridge had the lowest usage overall (12% wide-spread and 17% in spots, neither of which was reported to be done weekly.)**

Herbicide Use Varied, both Wide Spread...



Question 6.5: Apply Weed & Feed or other weed killer over the entire yard.

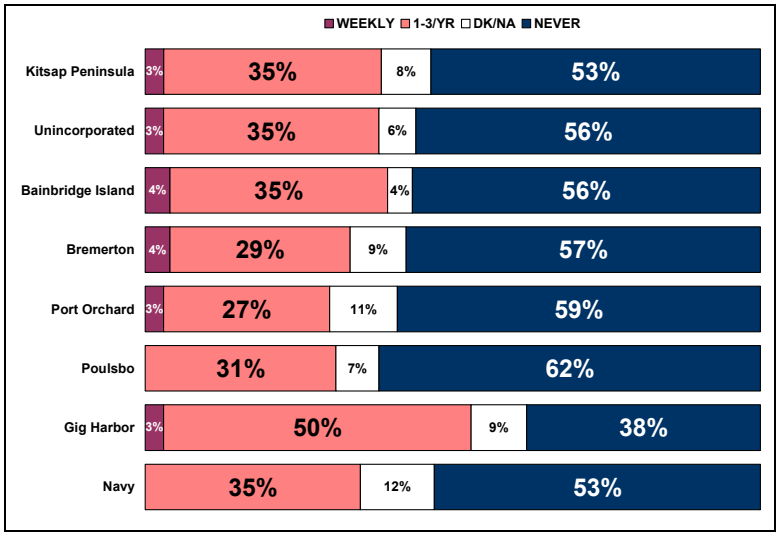
...And in "Small Spots"



Question 6.6: Apply weed killer in small spots where needed.

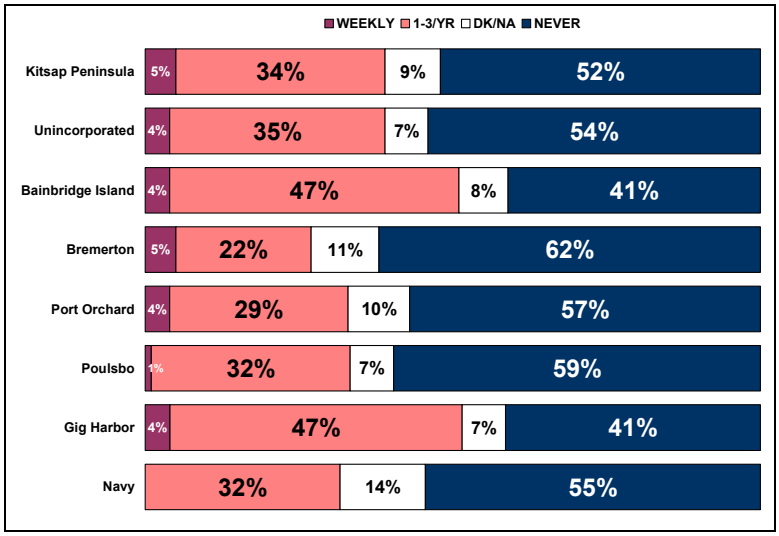
- **Port Orchard led in herbicide usage: 51% there used an herbicide over the entire yard, and 48% in spots.**
- **Gig Harbor residents were also likely to use herbicide in spots (53%), but not as many used it over the entire yard (41%).**

Widespread Organic Fertilizer Used Less Often...



Question 6.7: Apply organic or slow-release fertilizers over the entire yard.

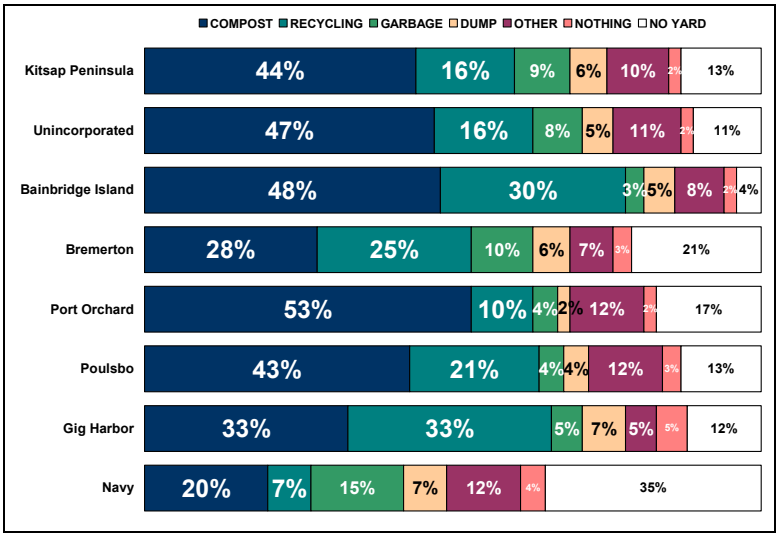
...As Were Spot Organics



Question 6.8 Apply organic or slow-release fertilizers in small spots where needed.

- **Gig Harbor had the highest proportion of organic user (53% widely, 51% in spots.)**
- **Bainbridge Island also included above-average spot organic users (51%).**

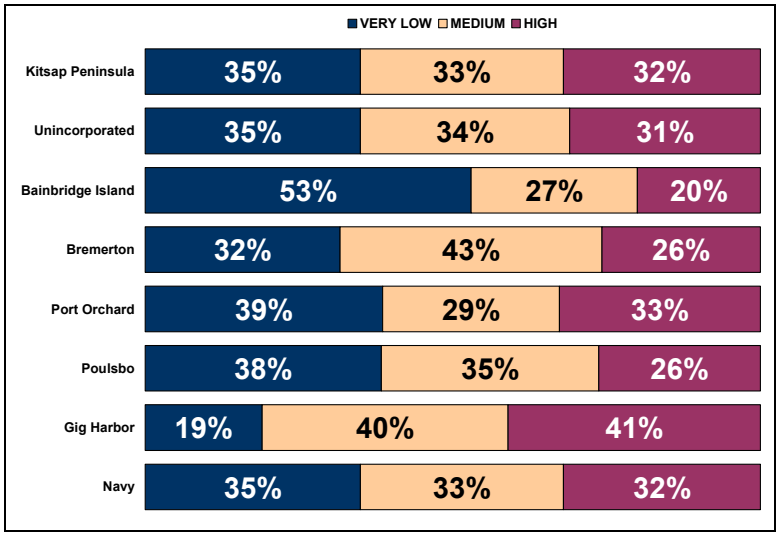
Yard Waste Usually Discarded Wisely



Question 7: What do you typically do with yard waste, like leaves and clippings?

- **Bainbridge led in the combined top two categories (composted on property, or through recycling/curbside pick-up):**
  - These two types of composting comprised 78% of Bainbridge responses.
  - Composting/recycling totaled around 60% for the Peninsula overall, and in the unincorporated areas.
  - Quite a few residents of Bremerton and Navy housing put yard waste in the garbage (10% and 15%, respectively).

Overall Yard Care Index Split Evenly in Most Cities

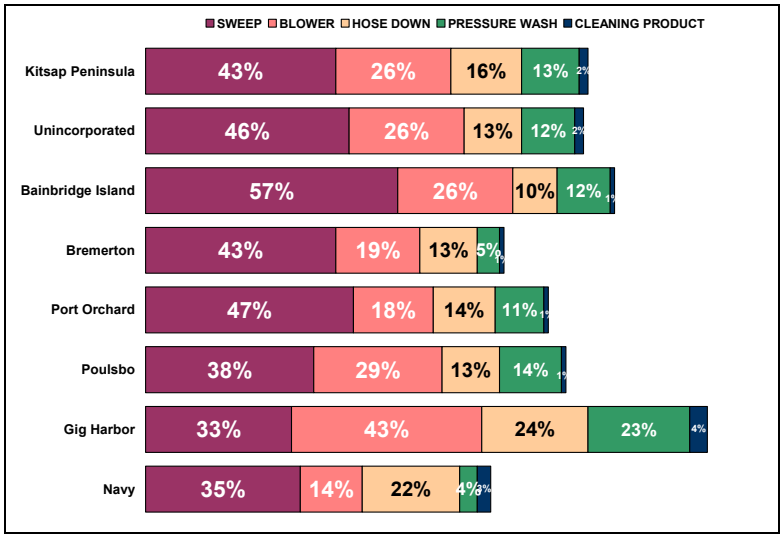


Constructed from the Question 6 series, Question 7 and the Question 8 series. [4]

- **Overall, the index of combined "undesirable" yard care practices was usually in the "very low" category for only Bainbridge Island residents (53%).**
- **Gig Harbor had the fewest respondents falling into the "very low" category (19%). It also had the most in the "high" category (41%).**
- **All of the other areas split roughly 1/3, 1/3, 1/3.**

[4] An explanation of this index can be found in the appendix, and in the narrative summary section of this report.

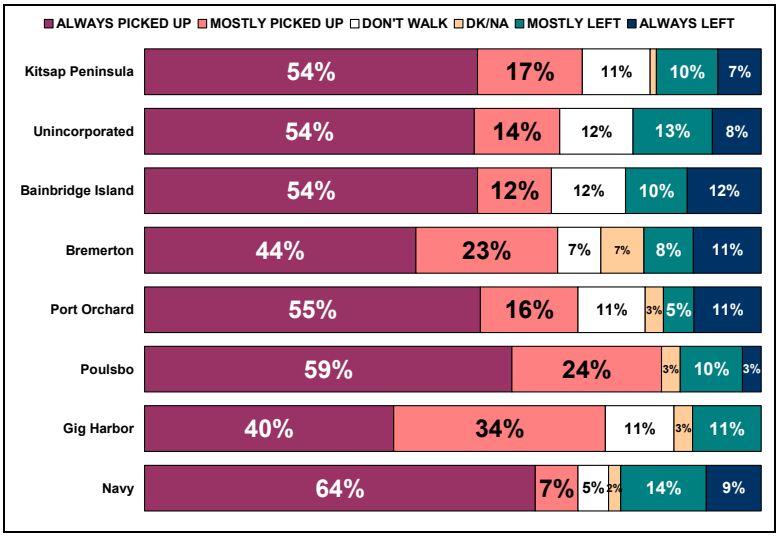
Outside Surface Typically Cleaned by Sweeping



Question 8: When you clean places like your driveway, walkways, patio or deck, do you typically… (Multiple responses allowed.)

- **Most residents Peninsula-wide either sweeps (43%) and/or use a blower (26%).**
- **Use of water to clean was most prevalent in Gig Harbor:**
  - 24% there hose down surfaces, and
  - 23% use a pressure washer.
- **The greatest proportions who sweep were on Bainbridge Island (57%).**

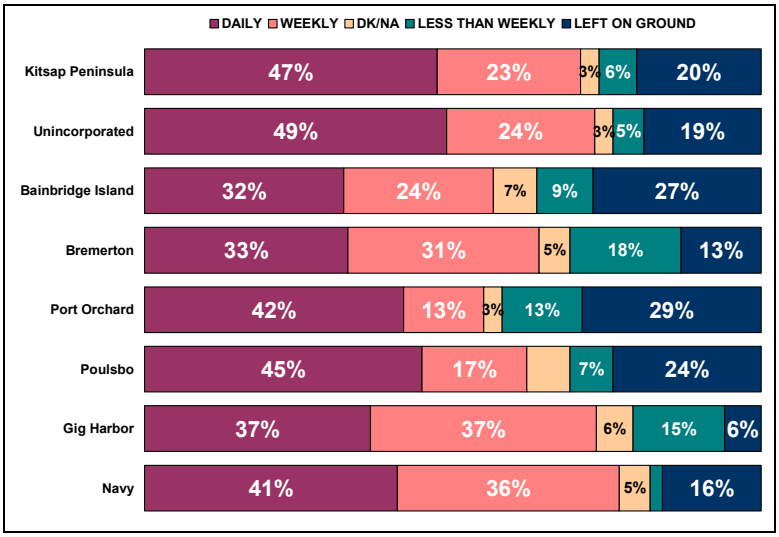
Dog Waste on Walks Picked Up Always/Mostly



Question 10: (Asked of dog owners only) When the dog is out for a walk, how is the dog waste dealt with? Would you say that it is…

- **Peninsula-wide, most respondents said that dog waste is picked up every time on walks (54%).**
- **The winners here were the respondents from Navy housing, 64% of whom said that they always pick up dog waste when walking.**
- **Gig Harbor had the lowest proportion saying that they "always" pick up dog waste on a walk:**
  - This number was 40% for Gig Harbor, although the remainder was likely to say that they "mostly" pick up.
  - Bremerton was a close second at "always" picking it up, at 44%.
- **An unfortunate proportion said that they weren't sure (11% overall). These are not apt to be individuals who pick up dog waste often.**

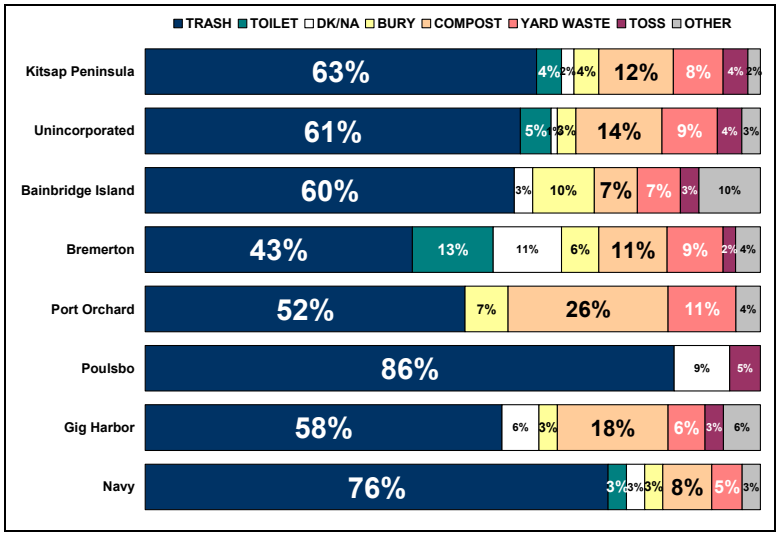
Dog Waste is Left More on Own Property



Question 11: (Asked only of those with dogs) How about the dog waste in the yard at home? Is the waste in the yard….

- **Port Orchard and Bainbridge residents with dogs were equally apt to leave dog waste on the ground on their own property (29% and 27%).**
- **Bainbridge and Bremerton residents reported the lowest proportions that pick the waste up daily (32% and 33 %.)**
- **Although a low percentage in Gig Harbor said that they just left it, the majority picked it up less often than daily (52%).**
- **Bremerton also had few residents who said it was left on the ground (13%), but the majority either picked it up less than daily or didn't answer (54%).**

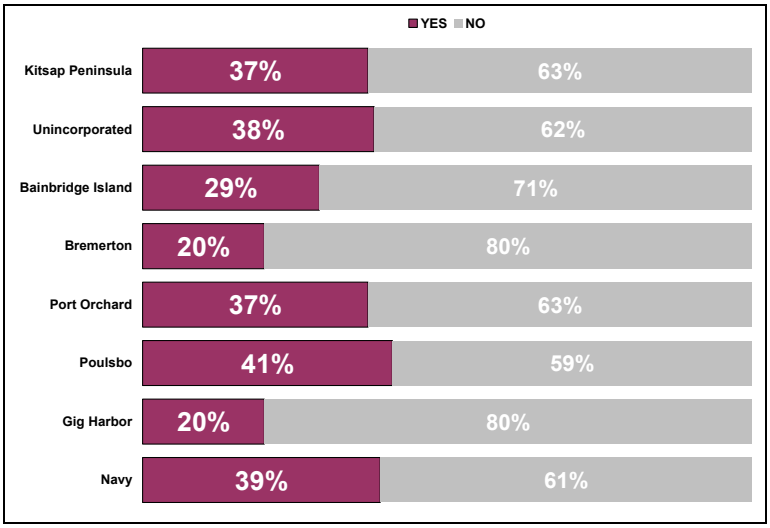
Disposal Methods for Dog Waste Vary



Question 11.1: (Asked only of dog owners) Once the waste is picked up, how do you typically dispose of it? Do you…

- **The majority of dog owners Peninsula-wide disposed of dog waste correctly, either in the trash (63%) or in the toilet (4%).**
- **Every geographic was also mostly correct.**
  - The minority of Bremerton residents put it in the garbage, but that city had the highest proportion who said that they flush dog waste (13%), so the two categories total over half.
- **Poulsbo did the best here, with 86% who said dog waste was put in the garbage, and no one who composted it, at home or in curb side pick-up.**
- **The Navy housing residents also dealt well with dog waste -- 76% putting it in the trash.**

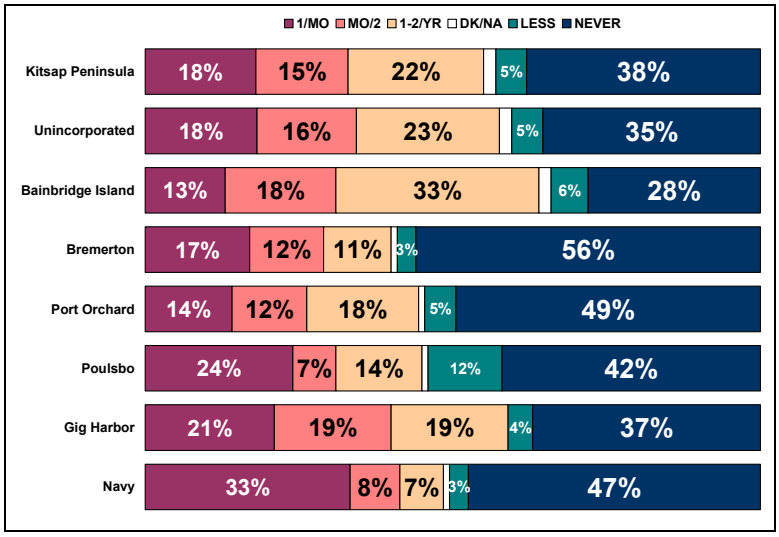
1 in 3 Deal with All Dog Waste Perfectly



This index counts any improper dog waste treatment, including not always picking it up while on a walk, not clean their own property daily, and/or doing something with picked-up waste other than flushing it or putting it in the garbage. See the appendix for details.

- **Conflating all of the dog waste data leaves 37% who always "do the right thing" (pick it up every walk, collect it daily from their yard, and put in trash or flush it.)**
- **This proportion was particularly <u>low</u> in Gig Harbor and Bremerton (both 20 %.)**
- **The other areas were on statistical parity, or close to it.**

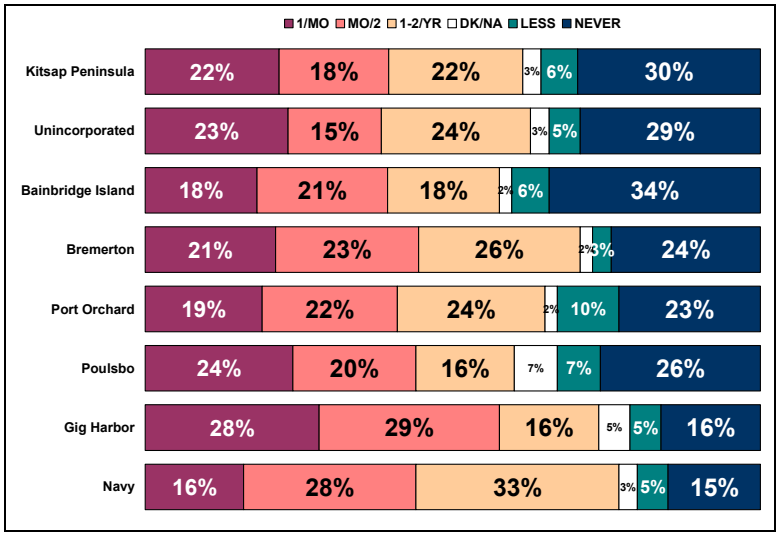
Half Wash Their Cars at Home



Question 12.1: Let's talk about the vehicles at home. When it comes to washing your family vehicles, how often do you wash them at home? Would you say….. (Question 12 series rotated in survey.)

- **1 in 4 (27%) wash their vehicles at home 1–2x a year, or less often.**
- **Bainbridge Island residents were most likely to do at least some car-washing at home, although they were among the least likely to do so weekly:**
  - 70% of Bainbridge Islanders washed their vehicles at home sometimes,
  - 13% did so weekly, vs.
  - 33% did so 1 – 2 a year or less.
- **Navy housing residents were the most likely to weekly wash their cars at home:**
  - A third (33%) did so.
  - Overall, however, relatively few Navy housing residents wash their cars at home (52%).
- **Respondents from Bremerton were the least apt overall to <u>ever</u> wash their vehicles at home (43 %.)**

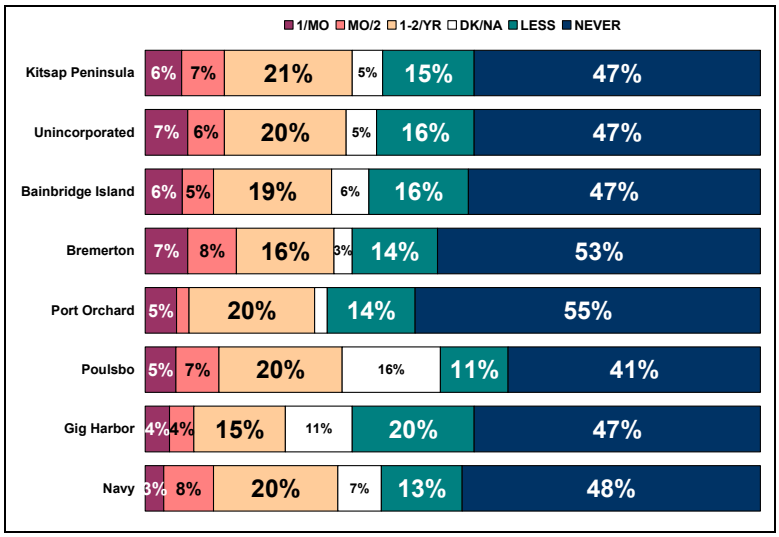
2 in 3 Use Commercial/Coin Car Washes



Question 12.2: When it comes to washing your family vehicles, how often do you take them to a commercial or coin operated car wash? Would you say…

- **Commercial car wash use is lowest on Bainbridge Island and in the unincorporated areas:**
  - A third from Bainbridge (34%) never use commercial/coin washes.
  - This is statistically the same (29%) in unincorporated areas.
- **Navy housing residents and respondents from Gig Harbor were the most likely to use commercial car washes.**
  - Only 15% and 16% never did, respectively.

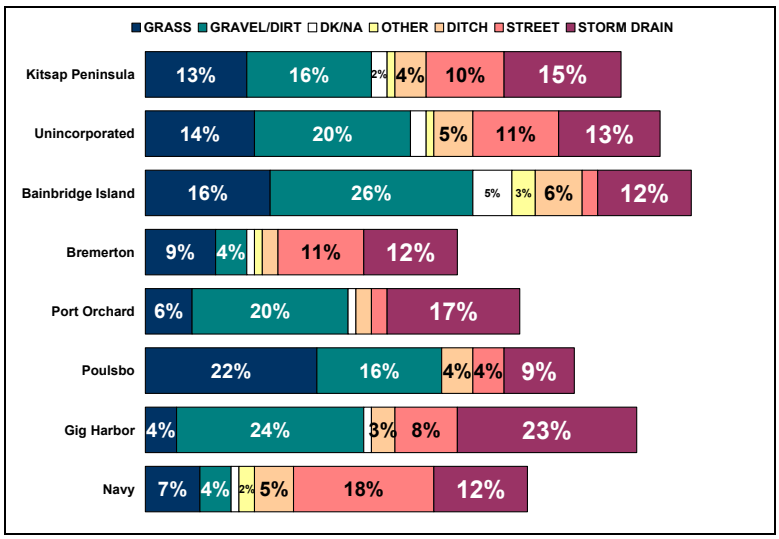
Fundraiser Car Washes Used by 1/2, But Not Often



Question 12.3: When it comes to washing your family vehicles, how often do take them to a charity car wash? Would you say…

- **These proportions do not vary significantly around the Peninsula.**
- **Poulsbo residents appear to be infrequent users, but a relatively large percentage from Poulsbo was not sure how often they use charity car washes (16%).**

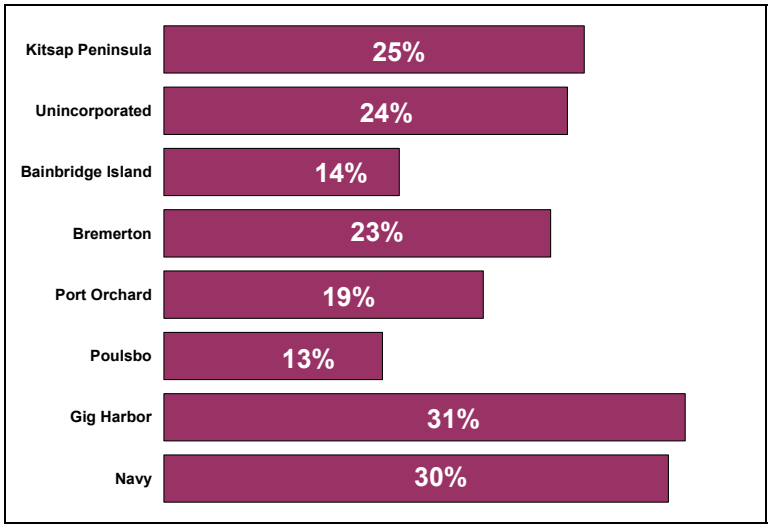
Overall Residents Split Between Improper and Proper At-Home Car Washing Place (of those who wash cars at home)



Question 12.1b: (Of those who wash any vehicles at home) When you wash your vehicles at home, where does the wash water go? Does it go… (Multiple responses allowed).

- **The areas most likely to allow car wash waters to drain to the worst places were:**
  - Gig Harbor respondents: straight into the storm drain (23%.)
  - Navy housing residents: down the street (18%)
- **The highest proportions washing on grass/dirt/gravel were from unincorporated areas, Bainbridge Island, Poulsbo, and, to a lesser extent, Gig Harbor.**

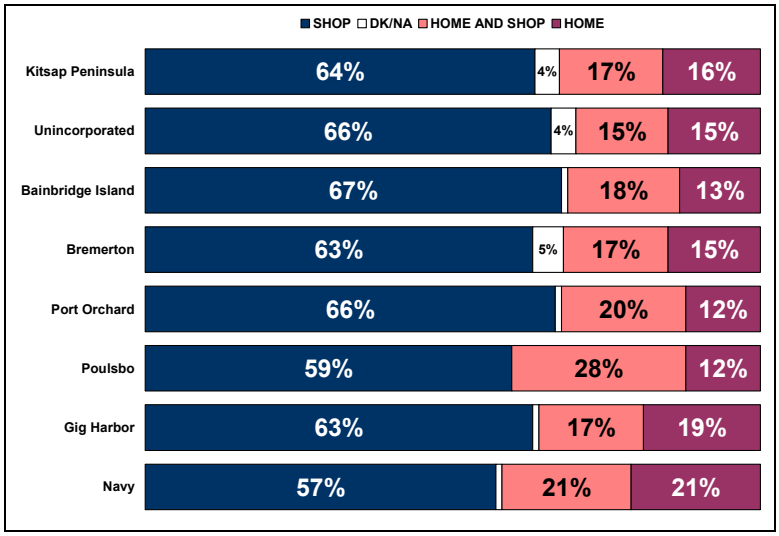
1 in 4 do at Least Some Improper Car Washing



These data are a combination of Questions 12 and 12.1. It includes any respondent who ever washes his or her car at home, and washes somewhere other than on grass, dirt, or gravel.

- **Overall, the worst car washers live in Gig Harbor or Navy Housing.**
  - 30%/31% of these groups washes their own cars on a paved surface, at least some of the time.
- **The lowest incidences of improper car washing were among residents of Bainbridge and Poulsbo.**
  - 14% and 13% of these groups washed on an improper surface.

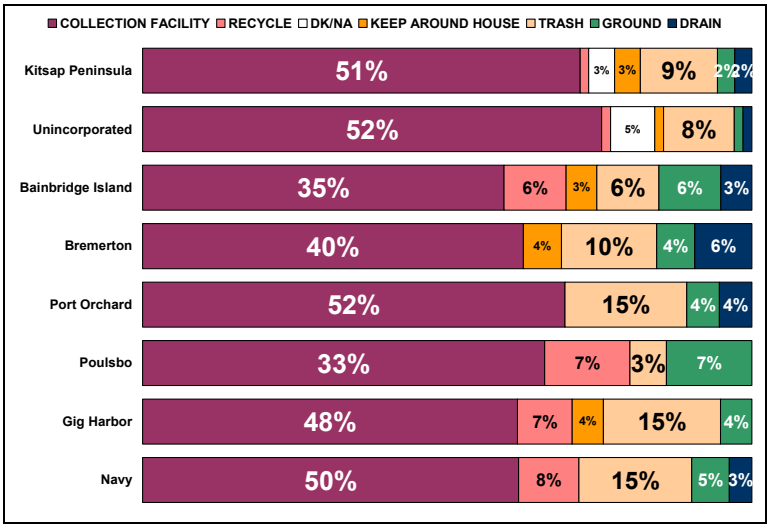
2 in 3 Overall Never Change Car Fluids at Home



Question 13: When it comes to changing the motor oil, anti-freeze and other fluids in the vehicles in your household, do you or someone else in your household typically do it at home, or are the vehicles taken to a service shop for that?

- **The remainder tends to split between always doing so, and having some such work done at a service shop.**
- **There was no statistically significant difference in this finding around the Peninsula.**

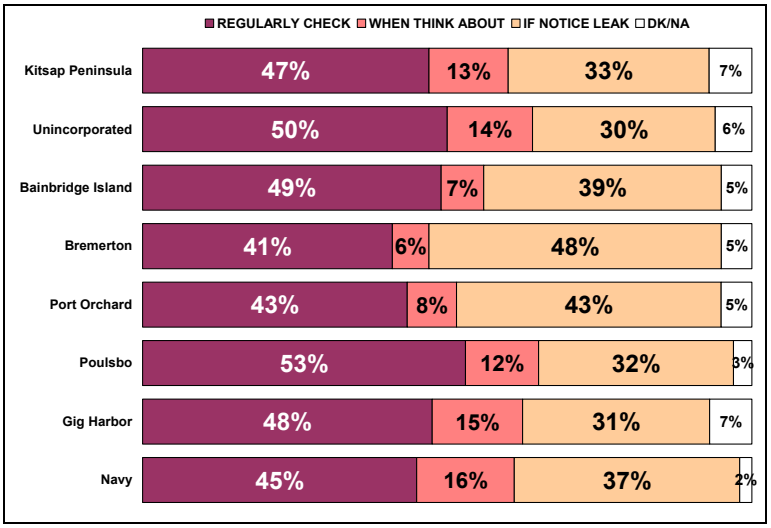
1 in 2 Do-it-Yourselfers Dispose of Fluids Properly



Question 13.1: (If motor oil is changed at home) If the motor oil or anti-freeze is changed at home, what is typically done with the used fluids?

- **Bremerton fluid-changers were the most likely to pour used fluids down the drain (6%).**
  - A few from Bainbridge, Port Orchard and Navy Housing also did so.
- **Bainbridge and Poulsbo residents were the most apt to pour it on the ground (6% and 7%, respectively.)**
- **Quite a few put it in the trash, particularly in certain cities:**
  - 9% Peninsula-wide gave this response, coming mostly from
  - 15% in Gig Harbor,
  - 15% in Navy Housing, and
  - 15% in Port Orchard.

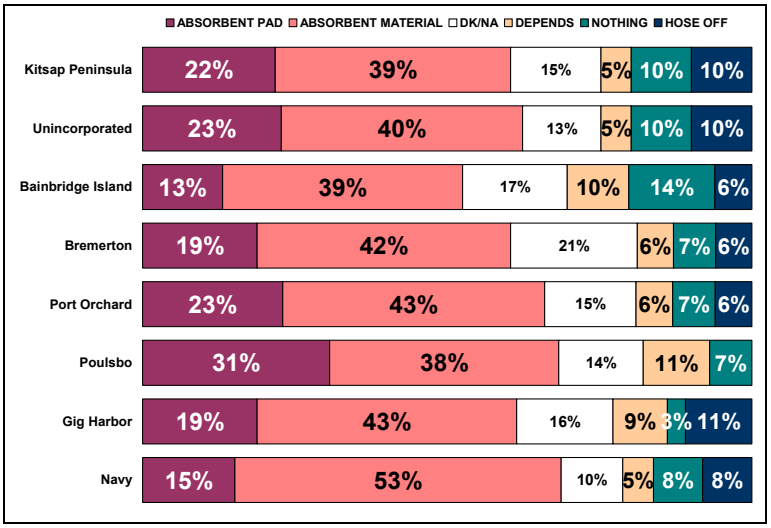
Nearly Half Check for Leaks Regularly



Q 14: When it comes to leaks under your vehicle, which of the following best describes you:
a. I make it a point to check for leaks under my vehicles regularly.
b. I look under the vehicles for leaks when I think of it.
c. I'll notice a leak if there is one, but I don't make a point of checking. (Rotated)

- **The remainder tended to say that they notice when they have a leak.**
  - 33% Peninsula-wide gave this response.
  - 48% did so in Bremerton, the highest rate.
- **Bremerton and Port Orchard respondents were the <u>least</u> likely to check for leaks regularly:**
  - 41% said they did in Bremerton.
  - 43% said so in Port Orchard.
  - Many other locations were on statistical parity with these locations.
- **Poulsbo respondents reported the highest rate of regular checking (53%).**

3 in 5 Would Put Absorbent Pad/Material on a Leak

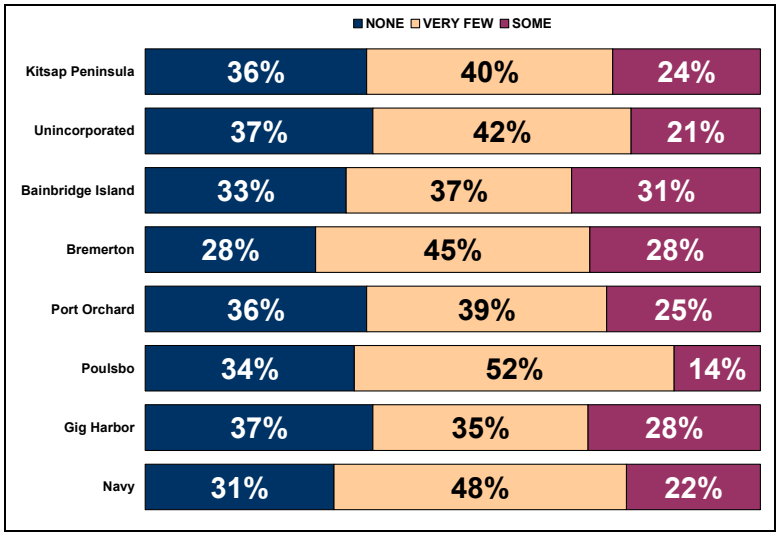


Question 15: If one of your vehicles leaked or spilled oil or antifreeze onto pavement, which of the following would you be most likely to do:

a. Hose it off
b. Put an absorbent pad under the leak to soak it up.
c. Put some absorbent material on the puddle.
d. Probably not do anything.
e. I don't know what I would do.
f. Depends (Not read)

- **This was fairly level across areas, with Bainbridge respondents being the least likely to use proper materials (52%).**
- **The most prevalent response otherwise was "I don't know" (15% Peninsula wide.)**
- **1 in 10 overall said that they would "hose it off."**
  - However, no one said so from Poulsbo.
- **Another 1 in 10 would do "nothing."**
  - This response was most prevalent among Bainbridge Island residents (14%).
  - Very few (3%) from Gig Harbor would do nothing.

1 in 3 Reported No Car Fluid Faux Pas

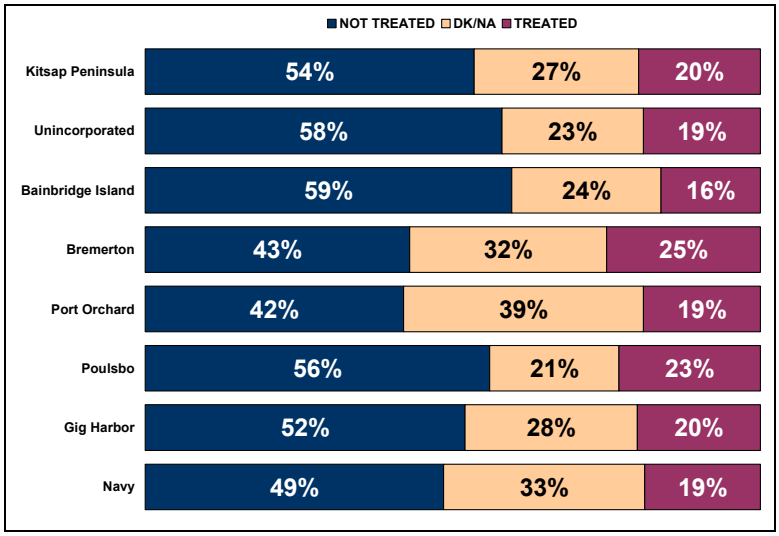


This index is a count/combination of questions 13.1 (disposal of fluids), question 14 (checking for leaks), and question 5 (dealing with leaks/spills). See the appendix for details.

- **The plurality (40%) admitted to only a few blunders, usually including not checking regularly for leaks.**

- **This did not vary drastically around the Peninsula:**
  - Poulsbo did have the fewest who reported multiple improper car fluid care practices (14%).
  - The remainder in Poulsbo was apt to report just a few (52%).

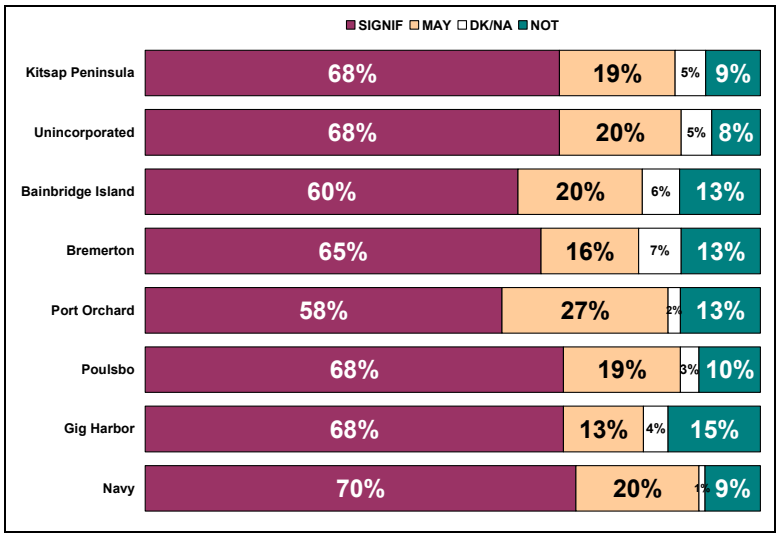
Half Knew That StormWater is Not Treated



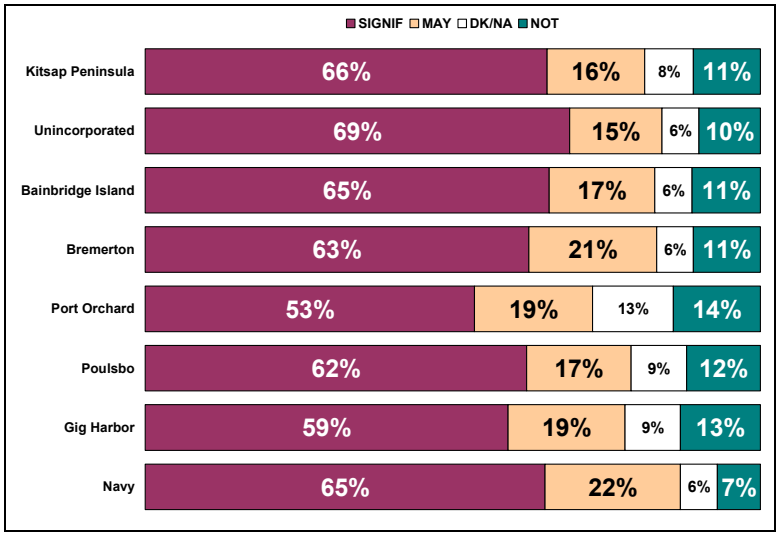
Question 16: Water that runs off of streets, parking lots, and rooftops drains into the storm drain system of gutters, pipes and ditches. To the best of your knowledge, what happens to the water that goes into storm drains? Does that water go to a treatment plant, or go into the nearest body of water without being treated?

- **Of the remainder, more said that they "didn't know" (27% overall) than thought for sure that it was treated (20%).**
- **Respondents from Bremerton and Port Orchard were the least likely to know that storm drain water is not treated.**
  - 43% knew from Bremerton, and
  - 42% from Port Orchard.

2 in 3 Overall Believe that Top Two Factors Contribute Significantly to Local Water Pollution



Improper Disposal of Household Hazardous Waste

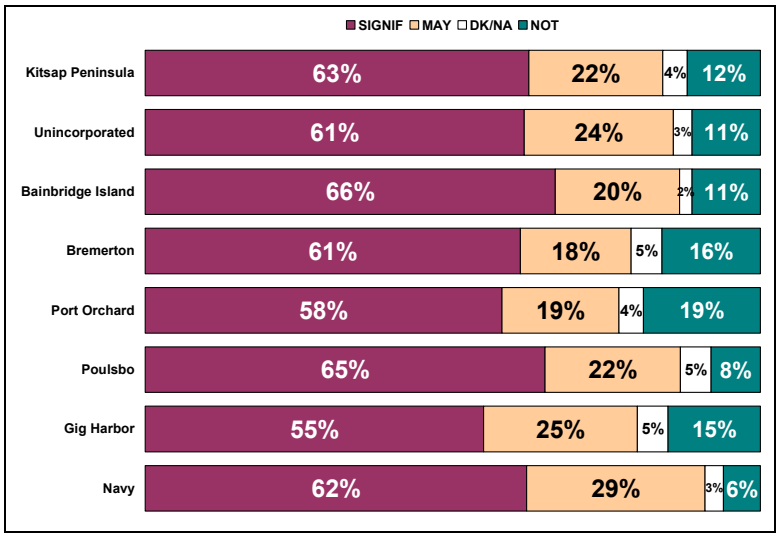


Leaking Septic Systems

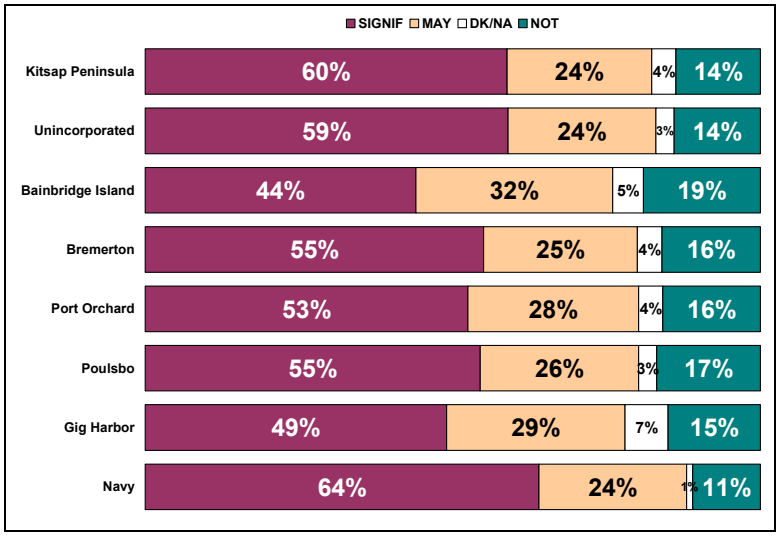
Question 17: Water from storm drains goes directly into the nearest body of water untreated. I am going to read you a list of some of the things that can get washed from towns and neighborhoods into lakes, streams, and Puget Sound. As I read each one, tell me whether you believe that is a Significant contribution to pollution in your local waterways, it May contribute an Insignificant Amount of pollution, or it Does not contribute to pollution in local waterways.

- **The top two, Household Hazardous Waste and Leaking Septic Systems were thought significant by most, in all areas.**

Yard Chemicals and Car Oil Leaks Were Thought Significant by Only Slightly Fewer



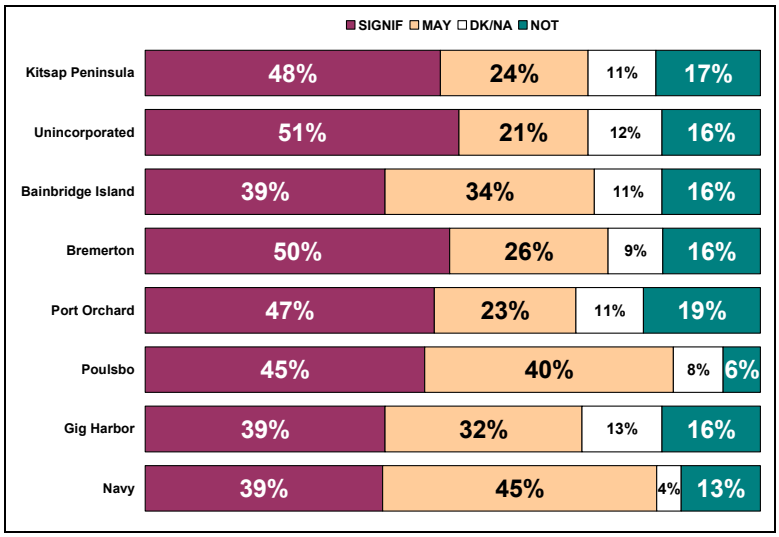
Pesticides and Fertilizers from Yards



Oil Leaks from Vehicles

- **Almost 2 in 3 overall thought each factor significant.**
- **Those in unincorporated areas and Navy housing were more aware of oil leak dangers than were residents of any city (59% and 64%).**
- **Port Orchardists were the most apt to say pesticides and fertilizers do <u>not</u> contribute to local water pollution.**

1 in 2 Called Construction Site Soil Erosion a Significant Contributor to Water Pollution

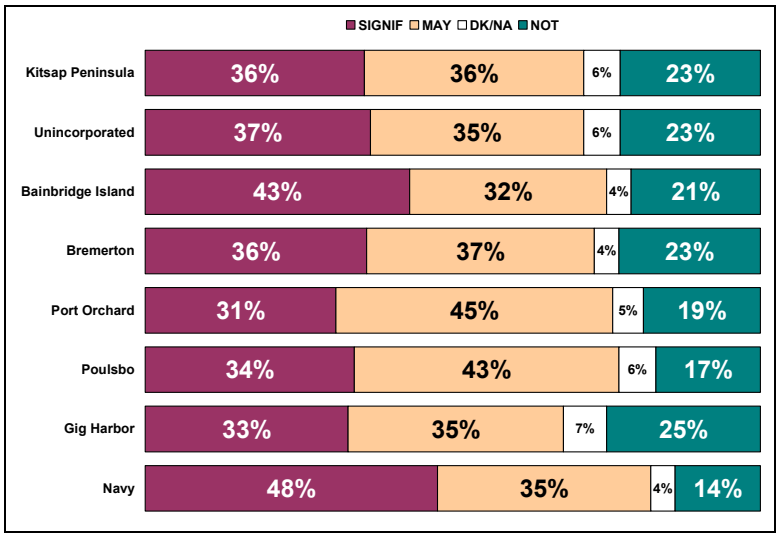


Erosion from Soil Left Exposed at Construction Sites

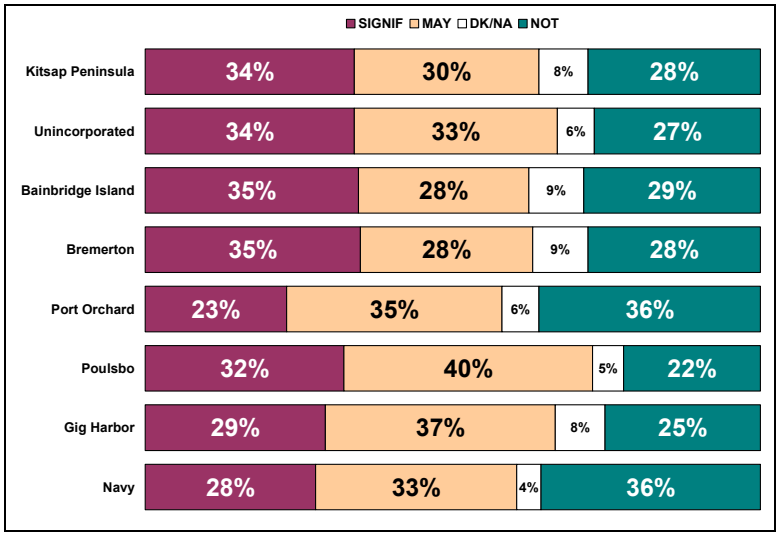
- **This varied somewhat around the Peninsula, those least likely to think it significant all scoring at 39%. These were:**
  - Bainbridge Island,
  - Gig Harbor, and
  - Navy Housing.

- **Poulsbo residents were most apt to think that construction site soil erosion was a contributor to water pollution, at least to some degree (85%).**

Car Wash Water and Pet Waste Least Likely to Be Thought Significant Contributors to Water Pollution



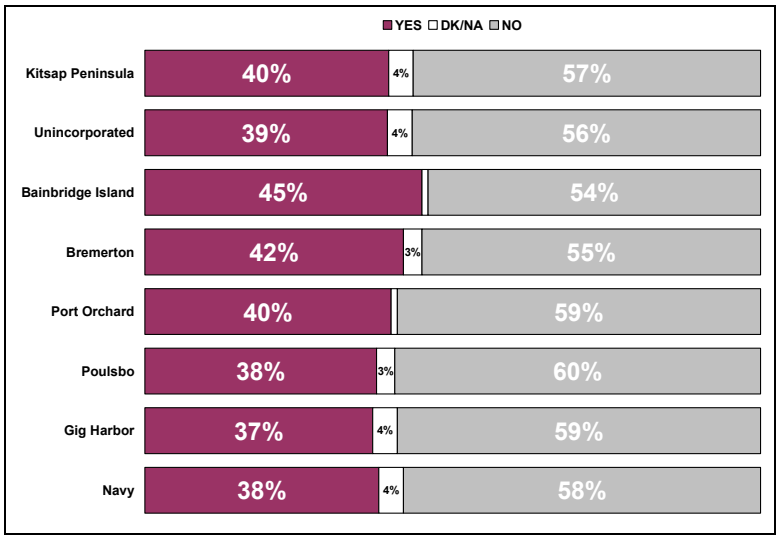
Soapy Water from Washing Cars on Pavement



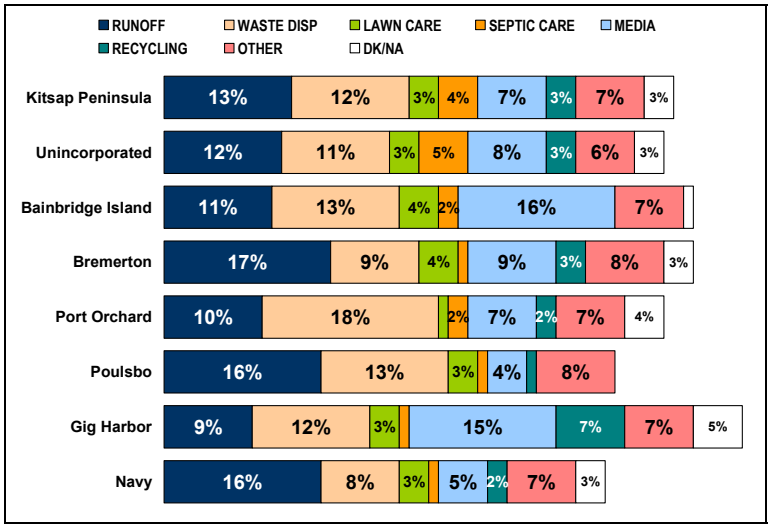
Pet Waste Left on the Ground

- **Around 1 in 3 over called each "significant."**
- **Residents of Navy housing were most likely to call car wash water significant (48%).**
- **Gig Harbor residents were least apt to say so about pet waste (23%).**

2/5 Had Heard Stormwater Pollution Message(s); Message Remembered Varied



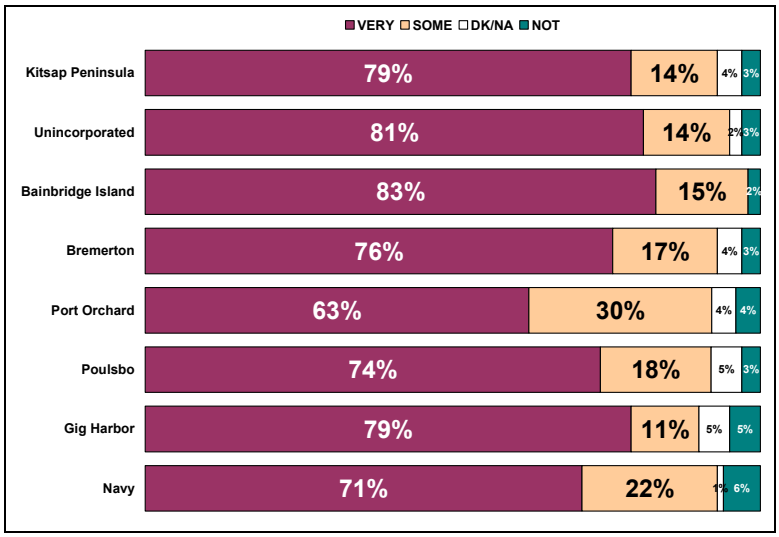
Question 18: In the last year or so, have you seen or heard anything about ways that people can help prevent pollution of stormwater on the Peninsula?



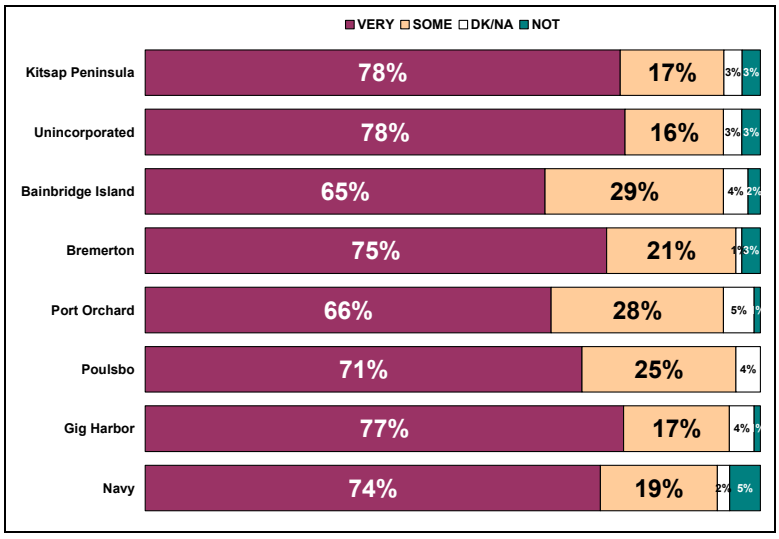
Question 18.1: What have you heard or seen?

- **Gig Harbor and Navy residents usually mentioned where they heard/saw a local water pollution message.**
- **Others tended to say something directly related to runoff (13% overall) or about proper disposal of different wastes (12%).**
  - This included batteries, HHHaz waste, and pet droppings.

4/5 Think Septic System Care & Fixing Car Leaks Are Very Effective Strategies to Protect Environment



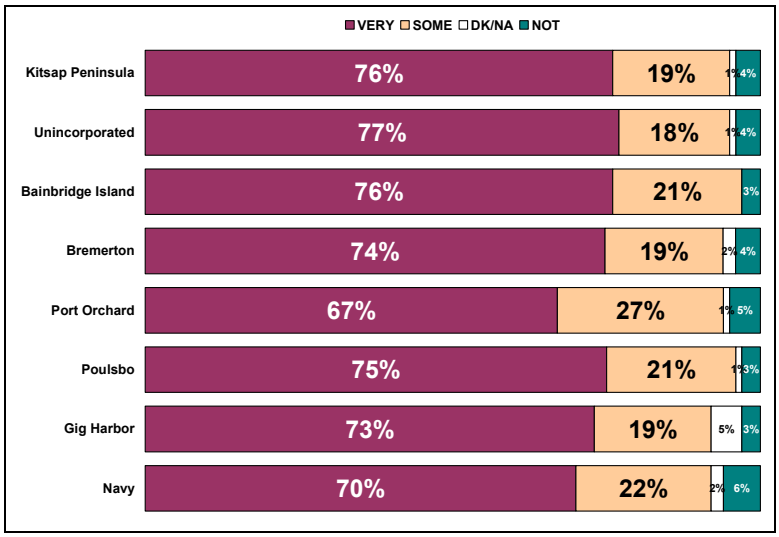
Regular septic system inspection and maintenance



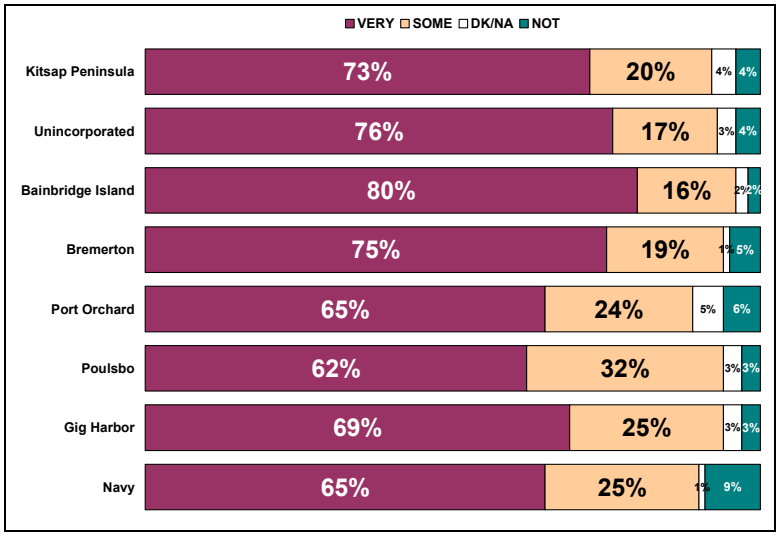
Fixing Vehicle Leaks

- **Port Orchard residents were least apt to think that septic system care would be very effective (63%).**
- **Port Orchard and Bainbridge respondents both were less believing than other of fixing vehicle leaks as a strategy:**
  - 65% and 66%, respectively, said such would be “very effective.”

3 in 4 Said the Same of "Correct" Cleaning Products and Lawn Care



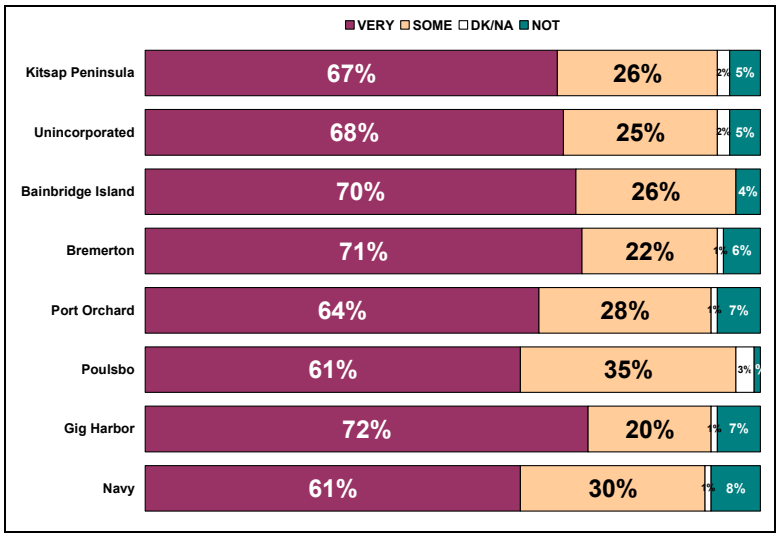
Using Environmentally Friendly Cleaning Products



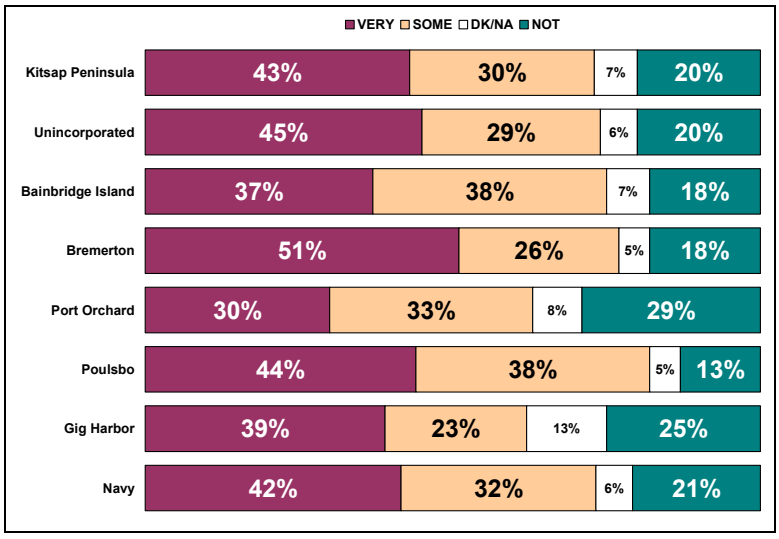
Using Natural Lawn Care Practices

- **There was very little statistically significant variation to either:**
  - Bainbridge residents were slightly more apt think highly of natural lawn care products.
  - Port Orchard may have the lowest opinion of environmental cleaning products (67%)

Composting is Thought Very Effective: Pet Waste Disposal Not So



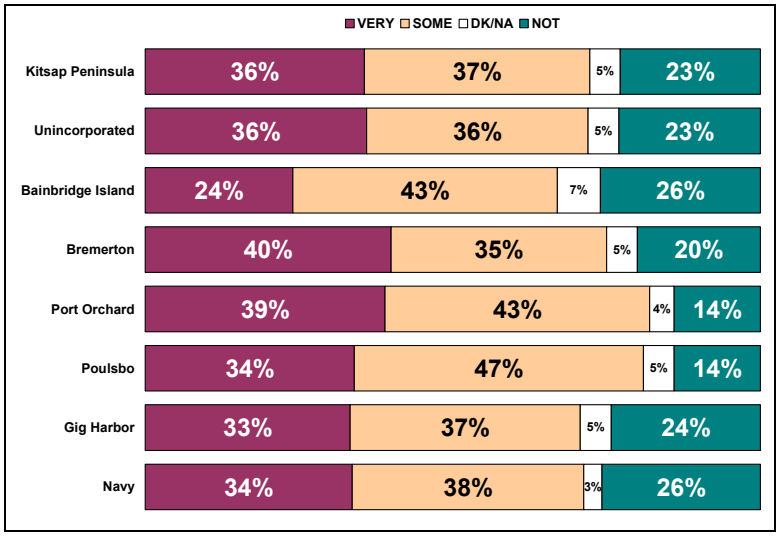
Composting or Recycling Yard Waste



Disposing of Pet Waste in the Garbage

- **Proper Disposal of Pet Waste is one of only two strategies that a minority thought would be "very effective."**
  - Bremerton was the only area where most said that putting pet waste in the garbage would be "very effective."

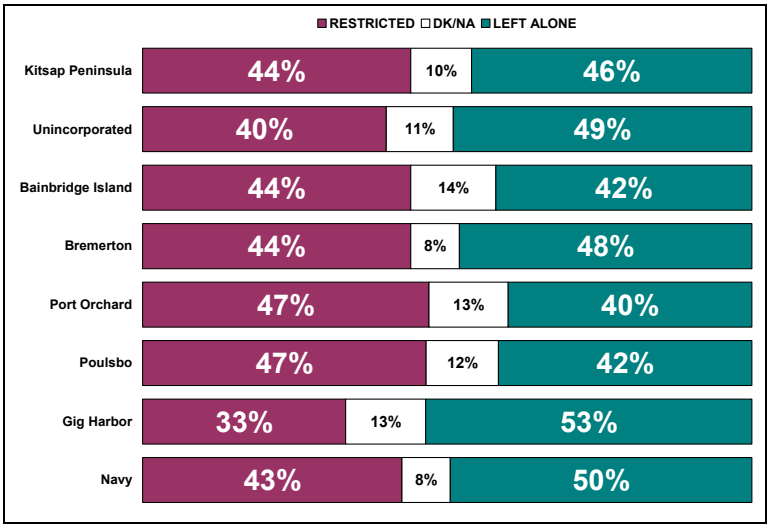
Support Lowest for Car Washing on Lawn/Gravel



Washing Your Car on the Lawn or Gravel

- **Only slightly over 1/3 called this "very effective."**
- **Bainbridge Island respondents were the least likely to be convinced:**
  - 1 in 4 on Bainbridge said "very effective." Most of the rest of respondents there said "some," however.

Opinions Split on Restricting Fundraiser Car Washes



Question 20: In some places, when school or charity groups hold car washes to raise money, the dirty, soapy water drains directly into local water ways. Because of this, some people think fundraiser carwashes should be restricted to certain areas with proper plumbing or drainage. Others think they don't do that much harm – plus, the money goes to good causes – so the restrictions are unnecessary. In your opinion, should restrictions be placed on fundraiser car washes or should they be left alone?

- **Gig Harbor residents were most likely to say that car wash fundraisers should be left alone (53%).**
- **Other variation among areas was not statistically significant.**

APPENDIX

CONSTRUCTION OF BEHAVIORAL INDICES

Yard Care Index

The behaviors reported in Question 6 were added together:

1. "Weekly" practices counted as "4s",
2. Several times a growing season as "3s",
3. "2 times a year" counted as "2s", and
4. "Never" counted as zeros.

The scores for practices which took place over a wide area were doubled. Questions 6.7 and 6.8, which asked about organic or slow-release fertilizers, were omitted. Single points were added if the respondent hosed, pressure-washed, or used cleaning products on outside surfaces.

This resulted in scores ranging from 0 to 36. The index levels were set at:
Low = 0-1;
Medium = 2-8; and
High = -36.

Dog Waste Disposal

To be a "yes" in this index, the respondent needed to:

1. Always pick up if walking the dog or not walk the dog at all (Q10),
2. Always clean up their own yard daily (Q11), and
3. Always put waste into the trash or flush it (Q11.1).
4. Other dog owners were defaulted to "no."

Car Wash Water

"Yes" in this category included those who

1. washed their vehicles at home at least sometimes and
2. responded that the water either went to the storm drain or the street.

Respondents who never washed at home, never washed, or washed at home with the water draining only on sand/gravel or grass were "no's."

Car Fluid Care

Respondents were given one point for:

1. Changing fluids at home and doing anything other than take it to a collection facility
2. Doing anything other than checking regularly for leaks (check sometimes, or just notice).
3. Treating spills/leaks in any way other than using an absorbent pad or materials to soak up the fluid.

The resultant index was a range of:
0 “none”
1 “Very Few”
2 “Some”.

TOPLINE DATA: Study Area Base Survey N=400

This summary presents response frequency distributions for the survey of Kitsap Peninsula residents on behalf of the Kitsap Peninsula Clean Runoff Collaborative.

Telephone interviews were completed with 400 adult heads of household residing on the Kitsap Peninsula between November 6-9, 2008. The overall margin of sampling error is ±5%. That means, in theory, there is a 95% probability that the results of this survey are within ±5% of the results that would have been obtained by interviewing all Kitsap Peninsula heads of household.

The data are presented here in a copy of the questionnaire in the interview.
The figures in bold type are percentages of respondents who gave each answer.
Percentages may not add to 100% due to rounding.

Hello. I'm calling from Elway Research, an independent public opinion research firm here in Washington state. My name is ___.We are conducting a random sample survey among residents on the Kitsap Peninsula. This is not a political call and we are not selling anything. You are one of 800 persons who is being interviewed. We are trying to keep our sample in balance, so my instructions are to talk to the [MALE / FEMALE] head of this household at this number.

1. First, is your residence inside the city limits, in an unincorporated area, or in Navy housing?

SKIP TO Q2 ← UNINCORPORATED KITSAP COUNTY…**66**
SKIP TO Q2 ← NAVY HOUSING…**2**
BAINBRIDGE ISLAND…**6**
BREMERTON…**11**
PORT ORCHARD…**9**
POULSBO…**4**
GIG HARBOR…**3**

2. Which of these best describes your home:

A single family house on its own lot…**81**
A duplex or multi-plex on its own lot…**9**
SKIP TO Q4 ←An apartment or condo…**10**

3. What size is the lot on which your home is located? Is it…

Half an acre or less…**57**
One half acre to two acres…**22**
Larger than two acres…**18**
[DK/NA…**3**]

4. Do you have a lawn or garden at your home?

YES…**86**
SKIP TO Q9 ← NO…**14**
SKIP TO Q9 ← DK/NA…**1**

YARD MAINTENANCE

5. Do you or someone in your household maintain the yard yourself? Or do you hire someone to take care of it?

SELF…**71**
BOTH SELF & HIRE…**16**
HIRE SOMEONE…**13**
DK/NA…**1**

6. I am going to read a list of products that people commonly use to keep their lawn and garden green. People sometimes use these products all over their lawn or garden, and sometime use them just on certain spots. How often are the following products used on your lawn or garden– if at all? First, do you [INSERT LIST] about once a week during the growing season, several times during the growing season, a couple of times a year, once a year, or never.

ROTATE	WEEK	SEVERAL	2/YR	1/YR	NEVER	NA
1. Apply chemical fertilizer over your entire yard	**1**	**15**	**11**	**15**	**52**	**5**
2. Apply chemical fertilizer in small spots where needed	**4**	**18**	**8**	**8**	**57**	**5**
3. Apply Pesticides over a wide area	**1**	**7**	**6**	**7**	**74**	**6**
4. Apply Pesticides in small spots where needed	**2**	**13**	**6**	**10**	**63**	**6**
5. Apply Weed & Feed or other weed killer over the entire yard	**2**	**11**	**11**	**17**	**54**	**5**
6. Apply weed killer in small spots where needed	**3**	**15**	**9**	**12**	**56**	**5**
7. Apply Organic or slow-release fertilizers over the entire yard	**3**	**13**	**9**	**13**	**53**	**8**
8. Apply Organic or slow-release fertilizers in small spots where needed	**5**	**15**	**9**	**9**	**52**	**9**

7. What do you typically do with yard waste, like leaves and lawn clippings?

DO NOT READ
COMPOST IN YARD…**51**
PUT INTO RECYCLING/ CURBSIDE PICK UP…**19**
PUT IN GARBAGE…**10**
TAKE TO DUMP / TRANSFER STATION…..**6**
BURN…..**3**
PUT IN WOODS…..**2**
TAKE TO DROP BOX…..**1**
PUT IN DITCH…..**1**
PUT IN WATER…..**0**
OTHER…..**6**
NOTHING…..**2**
[DK/NA…**3**]

8. When you clean places like your driveway, walkways, patio or deck…do you typically…

CIRCLE ALL THAT APPLY
Sweep Those Areas…**50**
Use A Blower…**30**
Hose Them Down…**19**
Pressure Wash Them…**15**
Use a cleaning product…**2**
OTHER…**4**
DON'T HAVE / DON'T CLEAN THOSE AREAS…**6**
[DK/NA…**1**]

PET WASTE

9. My next question is about pets. Do you have a pet dog? How many dogs are currently living at this household?

IF NO DOGS, SKIP TO Q12 ← …**48**

1……2……3……4……5+
32…14…..5….9……2

10. When the dog is out for a walk, how is the dog waste dealt with? Would you say the waste is …

ROTATE TOP/BOTTOM
Picked up Every Time…**54**
Picked up Most of The Time…**17**
Left on the ground Most of the time…**10**
Always Left on the ground.….**7**
DON'T WALK THE DOG…**11**
[DK/NA].….**1**

11. How about the dog waste in the yard at home? Is waste in the yard…

SKIP TO Q12← Left on the Ground…**20**
Cleaned Up Daily…**47**
Weekly…**23**
Every couple of weeks…**1**
Once a month or so…**2**
Less than once a month…**3**
[DK/NA]…**3**

11.1. Once the waste is picked up, how do you typically dispose of it? Do you…

Put it in the Trash…**63**
Put it in your compost…**12**
Put it in the yard waste collection bin…**8**
Flush down the toilet…**4**
Bury it…**4**
Toss it off the grass…**4**

[OTHER]…**2**
[DK/NA]…**2**

VEHICLE MAINTENANCE / OIL CHANGING

12. Let's talk about the vehicles at your home. When it comes to washing your family vehicles, how often do you [**INSERT LIST**]? Would you say once a month or more? Every couple of months? Once or twice a year or so? Less than once a year? Or never. [IF NO VEHICLES AT HOME, SKIP TO Q16]

ROTATE	1/MO	MO/2	1-2/YR	LESS	NVR	DK
1. Wash them at home	**18**	**15**	**22**	**5**	**38**	**2**
2. Take them to a commercial or coin operated car wash	**22**	**18**	**22**	**6**	**30**	**3**
3. Take them to a charity car wash	**6**	**7**	**21**	**15**	**47**	**5**

12.1. When you wash vehicles at home, where does the wash water go? Does it go… **[ROTATE 1-5]**

Down a Storm Drain…**15**
Down the Street…**10**
Into a Ditch…**4**
Onto Gravel, Dirt or Sand…**16**
Onto the Grass or other Vegetated Area…**13**
[OTHER…**1**]
[DK/NA…**2**]
Don't Wash at home/DK where washed…**40**

13. When it comes to changing the motor oil, anti-freeze and other fluids in the vehicles in your household, do you or someone else in your household typically do it at home, or are the vehicles taken to a service shop for that?

SOMEONE IN THE HOUSEHOLD CHANGES THE OIL AT HOME…**16**
SOMETIMES CHANGE OIL AT HOME/ SOMETIMES TAKE CAR TO SHOP …**17**
SKIP TO Q14 ←TAKE CARS TO SERVICE SHOP TO HAVE OIL CHANGED …**64**
DK/NA …**4**

13.1. IF MOTOR OIL IS CHANGED AT HOME ASK: When the motor oil or anti-freeze is changed at home, what is typically done with the used fluids?

[DO NOT READ] PLACE IT IN THE TRASH…**9**
POUR IT DOWN THE DRAIN….**2**
POUR IT ON THE GROUND…**2**
KEEP IT AROUND THE HOUSE…**3**
TAKE IT TO A COLLECTION FACILITY…**51**
OTHER)…**1**
RECYCLE..**3**
DK/NA…**9**

14. When it comes to leaks under your vehicle, which of the following best describes you:

ROTATE

I make it a point to check for leaks under my vehicles regularly…**47**
I look under the vehicles for leaks when I think of it…**13**
I'll notice a leak if there is one, but I don't make a point of checking…**33**
[DK/NA…**7**]

15. If one of your vehicles leaked or spilled oil or antifreeze onto pavement, which of the following would you be most likely to do:

Hose It Off…**10**
Put An Absorbent Pad Under The Leak To Soak It Up…**22**
Put Some Absorbent Material On the puddle…**39**
Probably Not Do Anything…**10**
I Don't Know What I Would Do…**15**
[DEPENDS]…**5**

ATTITUDES & AWARENESS

16. Water that runs off of streets, parking lots, and rooftops drains into the storm drain system of gutters, pipes and ditches. To the best of your knowledge, what happens to the water that goes into storm drains? Does that water…

Go to a treatment plant…**20**
or Go into the nearest body of water without being treated…**54**
[DK/NA…**27**]

17. [Actually / As you Said], water from storm drains goes directly into the nearest body of water untreated. I am going to read you a list of some of the things that can get washed from towns and neighborhoods into lakes, streams and Puget Sound . As I read each one, tell me whether you believe that is a Significant contribution to pollution in your local waterways, it May contribute an Insignificant Amount of pollution, or does Not contribute to pollution in your local waterways. The first one is…

ROTATE	SIGNIF	MAY	NOT	DK
1. Pesticides and fertilizers from yards	63	22	12	4
2. Oil leaks from vehicles	60	24	14	4
3. Soapy water from washing cars on pavement	23	36	23	6
4. Pet waste left on the ground	34	30	28	8
5. Erosion from soil left exposed at construction sites	48	24	17	11
6. Leaking septic systems	66	16	11	8
7. Improper disposal of cleaning fluids, paint, and other household hazardous waste	68	19	9	5

18. In the last year or so, have you seen or heard anything about ways that people can help prevent pollution of stormwater on the Peninsula?

YES…**40** NO…**57** [DK/NA…**4**]

18.1. IF YES: What have you heard or seen?

Runoff Related (don't dump in drains, spill/leak cleanup, proper car washing)….**13**
Proper Waste Disposal (Batteries, Dog Waste, Haz. Waste, Motor Oil, Paint) …**12**
Mentioned different sources (brochures, direct mail, newspaper, TV, at the Zoo, etc.)…..**7**
Proper care/maintenance of septic systems….**4**
Recycling…..**3**
Other…..**7**

19. Some people think the things we have been talking about are effective at protecting the environment. Others say they are mostly for show or to make people feel better – they are not really effective at protecting the environment. As I list some of the things we have been talking about, tell me whether you personally think it is *Very* Effective, *Somewhat* Effective or it Doesn't Really Do Much to protect the environment. The first one is…

ROTATE	VERY	SOME	NOT	DK
1. Composting or recycle yard waste	**67**	**26**	**5**	**2**
2. Washing your car on the lawn or gravel	**36**	**37**	**23**	**5**
3. Disposing of pet waste in the garbage	**43**	**30**	**20**	**7**
4. Using natural lawn care practices	**73**	**20**	**4**	**4**
5. Regular septic system inspection and maintenance	**79**	**14**	**3**	**4**
6. Using environmentally friendly cleaning products	**76**	**19**	**4**	**1**
7. Fixing vehicle leaks	**78**	**17**	**3**	**3**

20. In some places, when school or charity groups hold car washes to raise money the dirty soapy water drains directly into local water ways. Because of this, some people think fundraiser carwashes should be restricted to certain areas with proper plumbing or drainage. Others think they don't do that much harm – plus, the money goes to good causes – so such restrictions are unnecessary.

In your own opinion, should restrictions be placed on fundraiser car washes or should they be left alone?

RESTRICTED…**44** LEFT ALONE…**46** [DK/NA…**10**]

21. I have just a few last questions for our statistical analysis. How old are you?

18-35...**11**
36-50...**29**
51-64...**32**
65+...**28**
[NO ANSWER]....**2**

22. What is the last year of schooling you completed?

HIGH SCHOOL...**23**
BUSINESS/VOCATIONAL SCHOOL...**5**
SOME COLLEGE...**28**
COLLEGE DEGREE...**31**
GRADUATE/PROFESSIONAL SCHOOL...**12**
NA...**2**

23. Do you own or rent the place in which you live? OWN…**70** RENT…**17** [NA…**13**]

24. Which of the following best describes your household:

Single with no children at home...**24**
Couple with no children at home...**37**
Single with children at home...**6**
Couple with children at home...**31**
NA...**3**

25. Finally, which of these categories best describes your approximate household income - before taxes - for last year:

$25,000 OR LESS...**13**
$25 TO 50,000...**23**
$50 TO 75,000...**18**
OVER $75,000...**21**
[NO ANSWER]...**26**

Thank you very much. You have been very helpful

26. Gender Male…..**49**% Female…**51**%