Campbell Creek Watershed Survey Analysis

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Table of Contents

Table of Figures

Table of Tables

Introduction

The Campbell Creek Watershed Survey was created to gather information from local residents who are familiar with the creek. The goal was to get a popular view of creek and trail users in order to understand their concerns and recommendations for development of a Campbell Creek Watershed Plan by the Municipality of Anchorage's Watershed Management Services. One hundred and sixty people took part in the survey in July and August 2019. Following are the results from the 13 questions along with a breakdown of answers.

1. How long have you lived in Anchorage?

The majority of the respondents have lived in Anchorage for over 20 years which allows for some "historical" perspective on Campbell Creek, and was definitely evident in some of the responses. All in all, 94% have lived in Anchorage 6 years or longer.

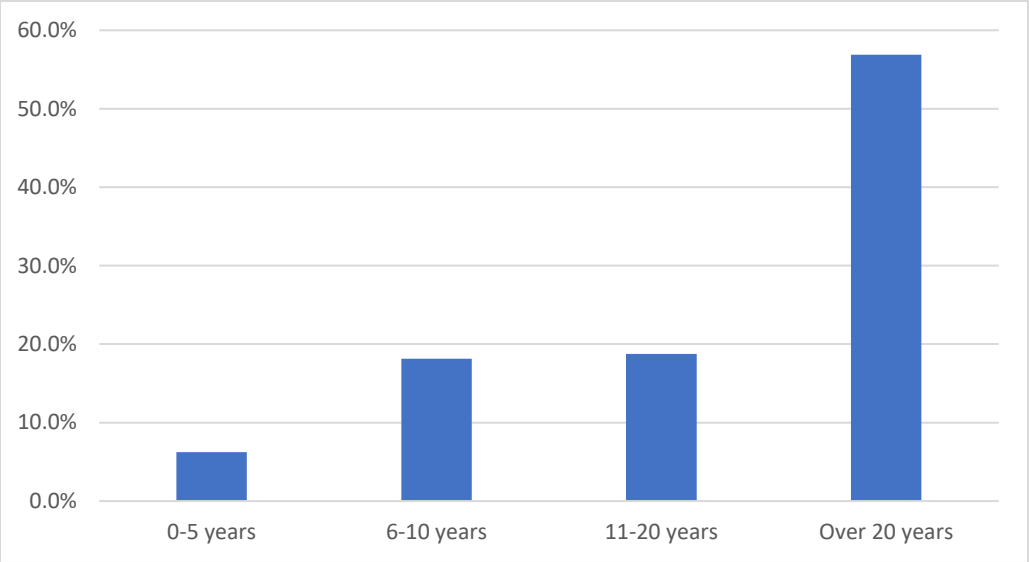

Figure 1 Respondents' years in Anchorage

Years in Anchorage	N=160	Percentage
Over 20 years	91	56.9%
11-20 years	30	18.8%
6-10 years	29	18.1%
0-5 years	10	6.3%

Table 1 Respondents' years in Anchorage

2. In which watershed do you live?

Seventy-six (48%) of the respondents live in the Campbell Creek/Little Campbell Creek watershed. Chester Creek watershed sported the second most with 39 (24%), and there was a relatively even smattering from Fish Creek, Eagle River, Ship Creek, and Furrow Creek watersheds, with one respondent each from Hood, Glacier, Little Rabbit, and Potter creek watersheds.

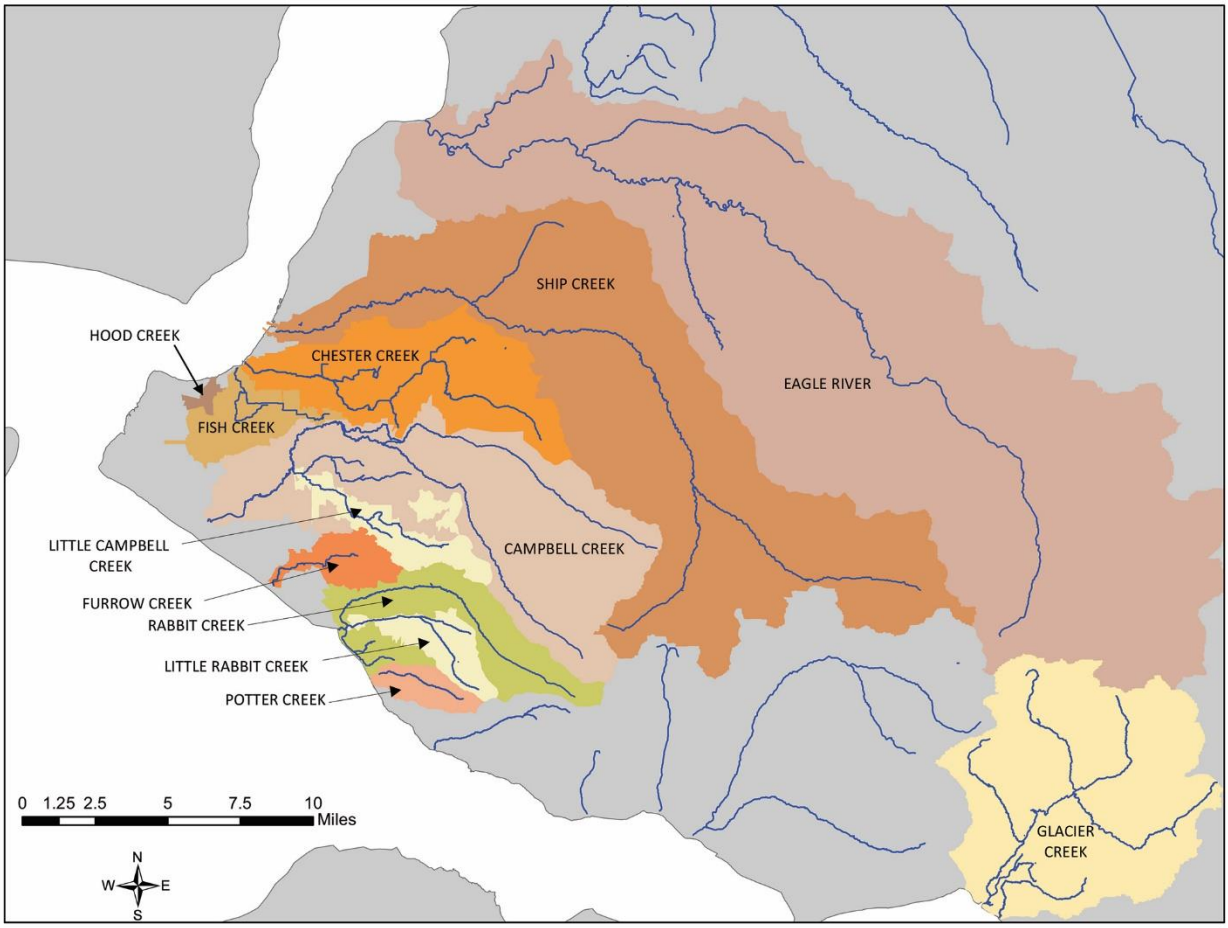

Figure 2 Watersheds where respondents live

Watershed	**N=160**	**Percentage**
Campbell Creek/Little Campbell Creek	76	48%
Chester Creek	39	24%
Fish Creek	12	8%
Eagle River	9	6%
Rabbit Creek	9	5%
Ship Creek	6	4%
Furrow Creek	5	3%
Hood Creek	1	.5%
Glacier Creek	1	.5%
Little Rabbit Creek	1	.5%
Potter Creek	1	.5%

Table 2 Watersheds where respondents live

3. Do you spend time along Campbell Creek?

All of the respondents, 153 (96%), except for 7 (4%) said that they did. Those answering "no", however, still continued on through the survey.

4. If you answered yes to question 3, what do you do there? Check all that apply.

The top four activities, biking, jogging/walking, observing birds/wildlife, and enjoying nature, involve traveling along the trail and enjoying the amenities associated with it. The number of responses is significant which suggests that the trail is both a good transportation corridor for commuting and exercise as well as a place to get back to nature in the midst of a highly urbanized area. In later responses, many likened the Campbell Creek greenbelt to a wild oasis in the middle of a city.

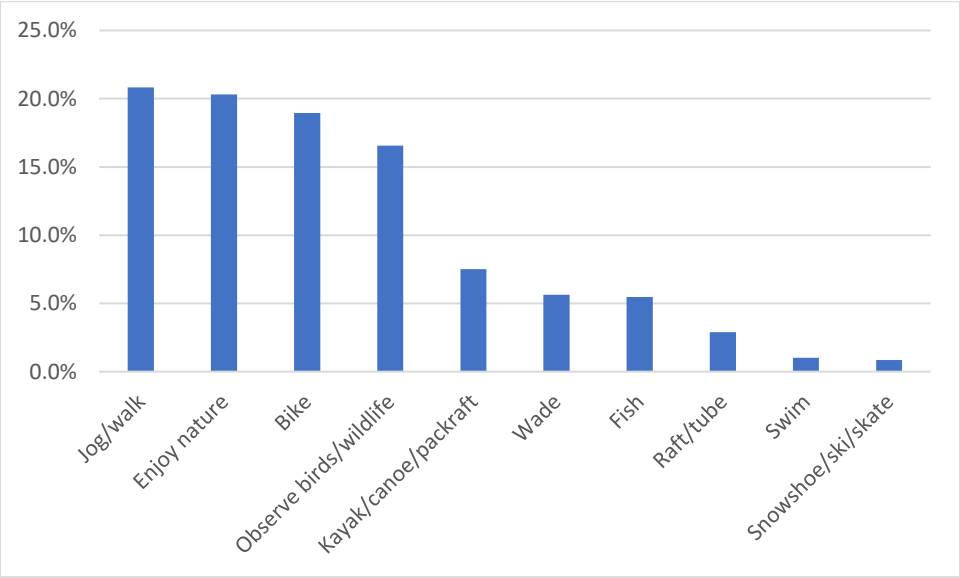

Figure 3 How respondents spend their time along Campbell Creek

Activity	N=586	Percentage
Jog/walk	122	20.8%
Enjoy nature	119	20.3%
Bike	111	18.9%
Observe birds/wildlife	97	16.6%
Kayak/canoe/packraft	44	7.5%
Wade	33	5.6%
Fish	32	5.5%
Raft/tube	17	2.9%
Swim	6	1.0%
Snowshoe/ski/skate	5	0.9%

Table 3 Respondents' activities along Campbell Creek (n=586)

The responses also show that the creek itself is a popular place for water activities, such as kayaking/canoeing, rafting/tubing, wading, and fishing. These four activities are known as "secondary

contact recreation" because of reduced exposure where only the limbs (arms and legs) are in contact with the water[1]. Swimming is considered "contact" recreation, and six respondents said that they swim in Campbell Creek. The designation of primary and secondary contact is important from the standpoint of the Alaska Water Quality Standards[2] (AWQS) which are overseen by the Alaska Department of Environmental Conservation (ADEC). The AWQS for contact recreation in regard to *E. coli* are as follows:

(B) Water Recreation (i) contact recreation	In a 30-day period, the geometric mean of samples may not exceed 126 *Escherichia coli (E. coli*) colony forming units (CFU)/ 100ml*,* and not more than 10% of the samples may exceed a statistical threshold value (STV) of 410 *E. coli* CFU/100 ml.
(B) Water Recreation (ii) secondary recreation	In a 30-day period, the geometric mean of samples may not exceed 200 fecal coliform/100 ml, and not more than 10% of the total samples may exceed 400 fecal coliform/100 ml.

Table 4 Fecal coliform limits for Water Recreation

This is important because Campbell Creek is on the state's impaired water list. It has a TMDL[3] from 2006 that states the creek does not meet the fecal coliform bacteria standard "for drinking, culinary, and food processing water supply that states that in a 30-day period, the geometric mean may not exceed 20 FC/100 mL, and not more than 10 percent of the samples may exceed 40 FC/100 mL."[4]

Lastly, there were a few interesting responses under "Other" which include: eat/picnic (1), geocache (1), pick berries (1), ride horses (1), do photography/sketch/paint (2), bushcraft (1), creek cleanup (1), and "homeless watching" (1).

5. Do you think recreational opportunities along Campbell Creek could be improved?

Fifty-one (32%) said no and 109 (68%) said yes. There were 103 useful responses as to what was needed to improve recreational opportunities of which the overwhelming one was in regard to homeless camps and their associated trash. The "impact of homeless campers" and "personal safety" categories total fifty-seven (55%) respondents who feel that these issues impinge on their recreational activities (Figure 4 and Table 5).

There were comments by 16 (16%) kayakers and canoers who would like to see some of the sweepers and obstacles removed as well as better infrastructure for put-in and takeout which would reduce bank damage.

"Access" was used often throughout the survey and tends to relate to a variety of situations. In some cases, it means knowing points where one can enter or leave the trail, and in other comments it seems to relate to the ease of access for recreating along the creek. Five cyclists (5%) wanted to have a better trail connection at Lake Otis and one mentioned joining the Campbell Creek Trail to the Coastal Trail. Other comments by cyclists include better signage warning them of large zigs and zags in the trail and the addition of bike stations similar to those on the Coastal Trail. "Foot" trail users and those biking

[1] theswimguide.org/2016/10/20/secondary-contact-recreational-water-actitivities/
[2] dec.alaska.gov/water/water-quality/standards/
[3] Total Daily Maximum Load is a calculation of the maximum amount of a pollutant allowed to enter a waterbody so that the waterbody will meet and continue to meet water quality standards for that particular pollutant.
[4] https://dec.alaska.gov/water/water-quality/impaired-waters/#impaired-water-tabs

and skiing have some issues with each other in terms of speed and approach warnings, ruts left by one activity or another, e.g. fat tire bikes messing up the groomed trails and dog interactions. Only 3 (3%) people voiced any concerns about animal waste (dogs and horses).

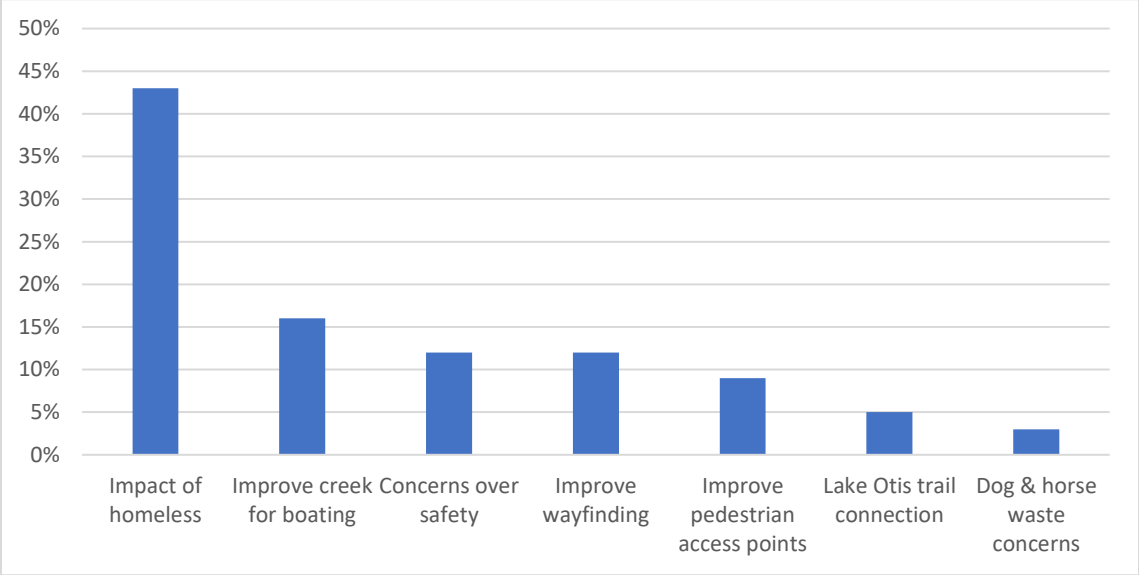

Figure 4 Areas needing improvement of recreational opportunities along Campbell Creek

Areas for Improvement	N=103	Percentage
Impact of homeless	45	43%
Improve creek for boating	16	16%
Concerns over safety	12	12%
Improve wayfinding	12	12%
Improve pedestrian access points	10	9%
Lake Otis trail connection	5	5%
Dog and horse waste concerns	3	3%

Table 5 Responses for areas needing improvement for recreational activities along Campbell Creek

6. What do you see as assets or detractors along Campbell Creek? (multiple answers allowed).

Assets: It is apparent that Campbell Creek and its trail system are highly favored by users. Having access to nature in the middle of a city was the favorite followed by a great appreciation for the wonderful trail system (especially those parts that have been improved). This combination allows access to wildlife, fish, greenspace, beauty, water, wilderness, and peace and quiet. There were 100 comments on assets (Figure 5 and Table 6).

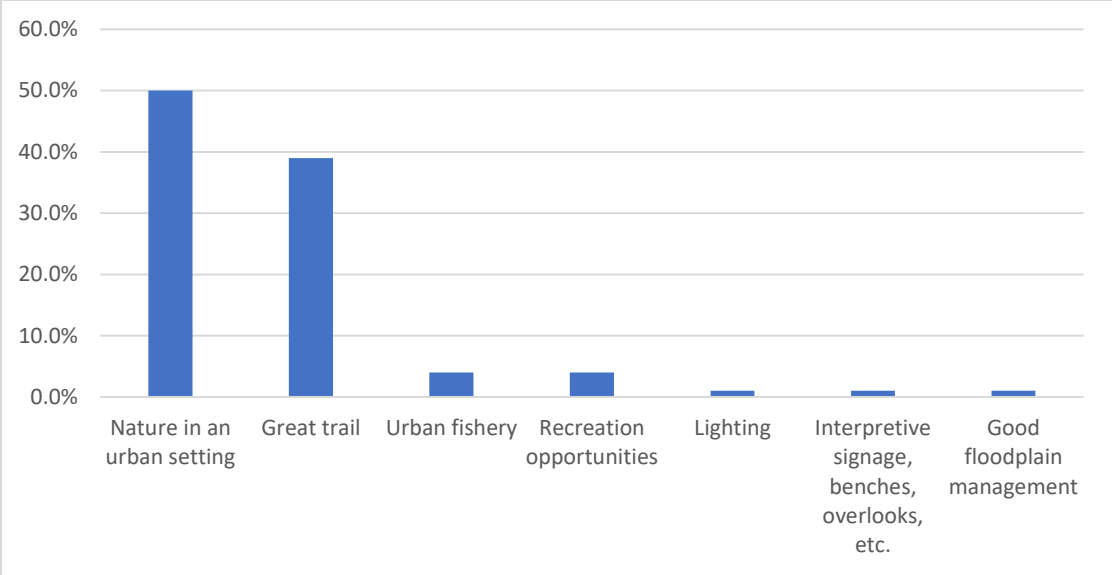

Figure 5 Assets along Campbell Creek

Campbell Creek Assets	N=100	Percentage
Nature in an urban setting	50	50.0%
Great trail	39	39.0%
Urban fishery	4	4.0%
Recreation opportunities	4	4.0%
Lighting	1	1.0%
Interpretive signage, benches, overlooks, etc.	1	1.0%
Good floodplain management	1	1.0%

Table 6 Assets along Campbell Creek

Detractors: Homeless and the associated problems of trash, water quality, and personal safety still outrank other concerns with a total of 161 (62%) comments on these issues. Their comments have to do with criminal activity, intimidation, drug use, and the lack of a police presence.

In regard to environmental concerns, there were far fewer. These comments were primarily about eroded banks and trampled vegetation (10 or 4.9%), animal waste (5 or 2.5%), water pollution from street runoff (4 or 2%), and invasives (3 or 1.5%). It is likely that mentioning trimming back trees along the trails (4 or 2%) has to do with trail safety. Kayakers and rafters are concerned about trees and branches in the creeks (6 or 3%) which is similar to cyclists (3 or 1.5%) who complained about roots pushing the pavement up.

These are eight "various" single responses that are worth noting: fast moving cyclists (2), trail maintenance (1), off leash dogs (1), need for Lake Otis connection (1), condition of docks and viewing platforms (1), mushroom gatherers that leave holes (1), and lack of access to Campbell Lake (1)[5].

[5] On December 6, 2019, the Alaska Department of Natural Resources and the Municipality of Anchorage issued a joint statement (dnr.alaska.gov/mlw/nav/pdfs/joint-statement.pdf) clarifying access to Campbell Lake. The survey was completed before this date.

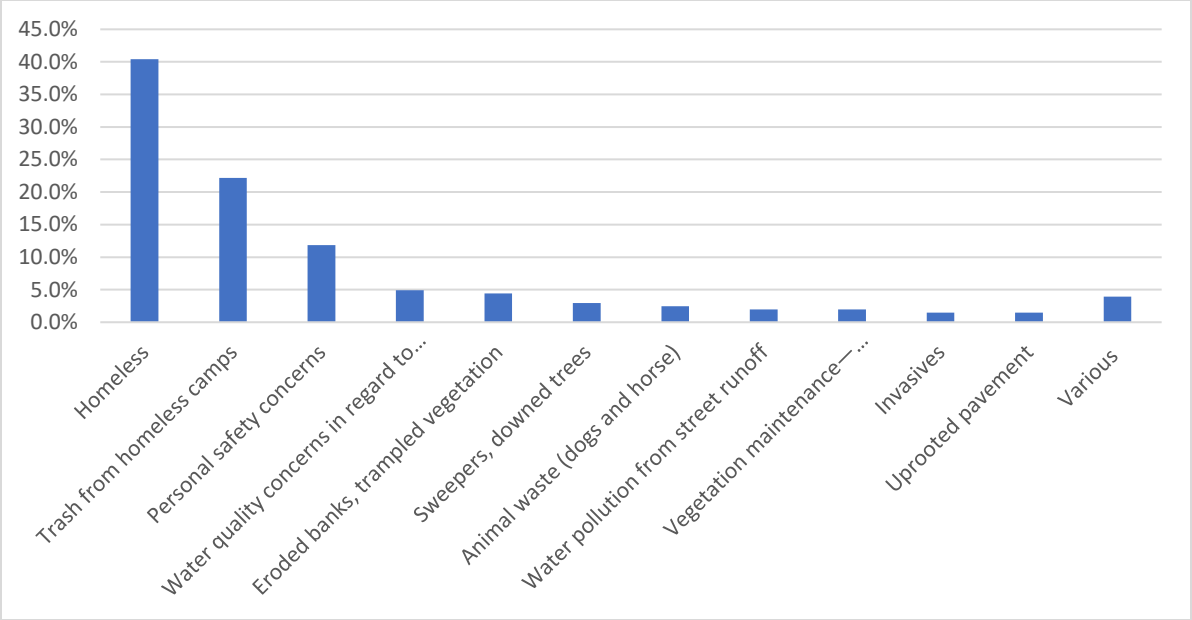

Figure 6 Detractors along Campbell Creek

Campbell Creek Detractors	**N=203**	**Percentage**
Homeless	82	40.4%
Trash from homeless camps	45	22.2%
Personal safety concerns	24	11.8%
Water quality concerns in regard to homeless	10	4.9%
Eroded banks, trampled vegetation	9	4.4%
Sweepers, downed trees	6	3.0%
Animal waste (dogs and horse)	5	2.5%
Water pollution from street runoff	4	2.0%
Vegetation maintenance—trimming back trees	4	2.0%
Invasives	3	1.5%
Uprooted pavement	3	1.5%
Various (see comments in text)	8	3.9%

Table 7 Detractors along Campbell Creek

7. Which of these photos of Campbell Creek do you think has better water quality? You can select one, both, or neither.

Photo 1

Photo 2

Figure 7 Photo comparison question

Overwhelmingly 67.5% chose the second photo as representing better water quality. Almost 7% percent selected the first photo, and 26% concluded "Neither". The correct answer was "Neither" as it's the same location on Campbell Creek with one photo from May and the other from June. The appearance of green vegetation as opposed to that of post-breakup most likely influenced the respondents.

Campbell Creek photo 1	11	6.9%
Campbell Creek photo 2	114	67.5%
Neither	44	26.0%

Table 8 Photo comparison responses[6]

8. Campbell Creek is on the Alaska Impaired Waters list because of high levels of *E. coli* (fecal coliform bacteria). *E. coli* are found in the feces of warm-blooded animals—birds and mammals, including humans. *E. coli* by themselves are not necessarily a problem, but they indicate that the water is contaminated with feces which may contain harmful bacteria. What do you think are the primary sources for *E. coli* contamination of Campbell Creek? (multiple answers allowed).

Dogs (123 or 30.8%) are the highest category and are most likely the primary *E. coli* source in many Anchorage creeks. With an estimated 65,000 dogs in the Municipality that relieve themselves daily an average of ¾ lb. of waste per dog—this translates to 48,000 lbs. or about 24 tons of dog waste each and every day[7].

The second highest response (103 or 25.8%) was for "humans-directly". Because "leaking septic systems" was also a choice and several respondents specifically mentioned human waste, the supposition is that respondents differentiated between the two, and the "humans-directly" is probably

[6] Apparently, some of the respondents answered more than once as the total is 169 vs. 160.
[7] muni.org/Departments/health/Admin/animal_control/Pages/scoop.aspx

aimed at the homeless camps. "Leaking septic systems" will most likely be recognized by those who have them. Proper use and maintenance (including pumping every 2 years) are important for them to function properly or they may need replacing[8]. Maintenance and replacement are not inexpensive, so it's quite possible that these steps are neglected which can lead to contamination of ground water.

Wildlife (waterfowl, beavers, moose, and bears) accounted for 94 (23.5%), and for "Other" there were 16 (1.3%) responses. Six said they did not know, 3 said a combination of them, 2 said street runoff/stormwater, 2 thought it might be horses, 1 suggested cats, and 1 said stormwater runoff with waste from pets and homeless camps.

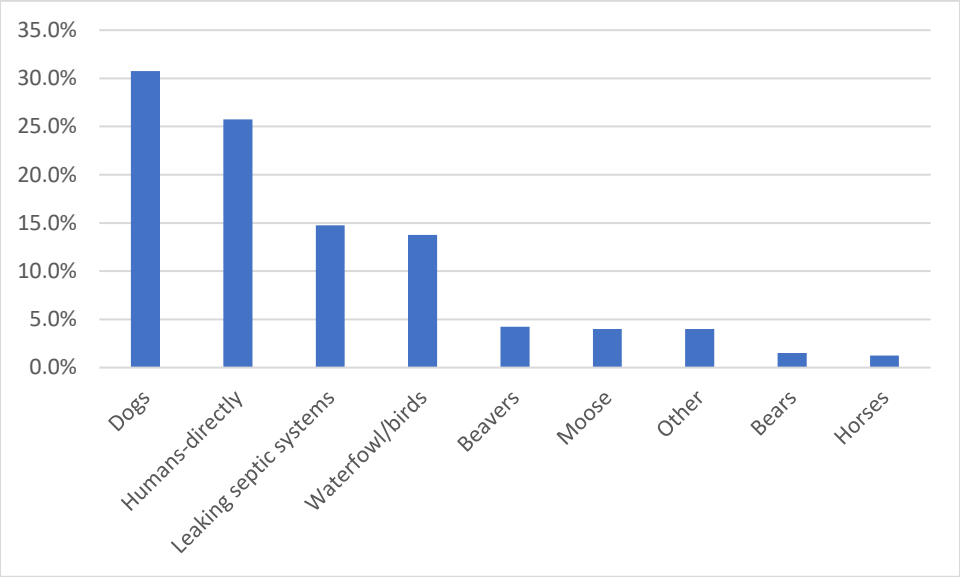

Figure 8 Sources of fecal coliform according to respondents

Source	N=400	Percentage
Dogs	123	30.8%
Humans-directly	103	25.8%
Leaking septic systems	59	14.8%
Waterfowl/birds	55	13.8%
Beavers	17	4.3%
Moose	16	4.0%
Bears	6	4.0%
Horses	5	1.5%
Other	16	1.3%

Table 9 Sources of fecal coliform according to respondents

[8] dec.alaska.gov/water/wastewater/engineering/maintain-septic

9. Have you noticed changes in the water quality of Campbell Creek over time?

One hundred and one (63%) said they have noticed no changes, and 59 (37%) said yes, and most provided an explanation of why they chose this. There were 44 useful responses. Of the 38 respondents for negative changes, 28 (63.7%) stated water quality was worse due to "pollution"; eroded banks and trampled vegetation were mentioned by 5 (11.5%), turbidity by 4 (9.1%), and dogs by 1 (2.1%). Only 6 thought it had improved with 3 (6.9%) being non-specific, 2 (4.6%) citing less trash, and 1 (2.1%) for habitat restoration—which is definitely a positive.

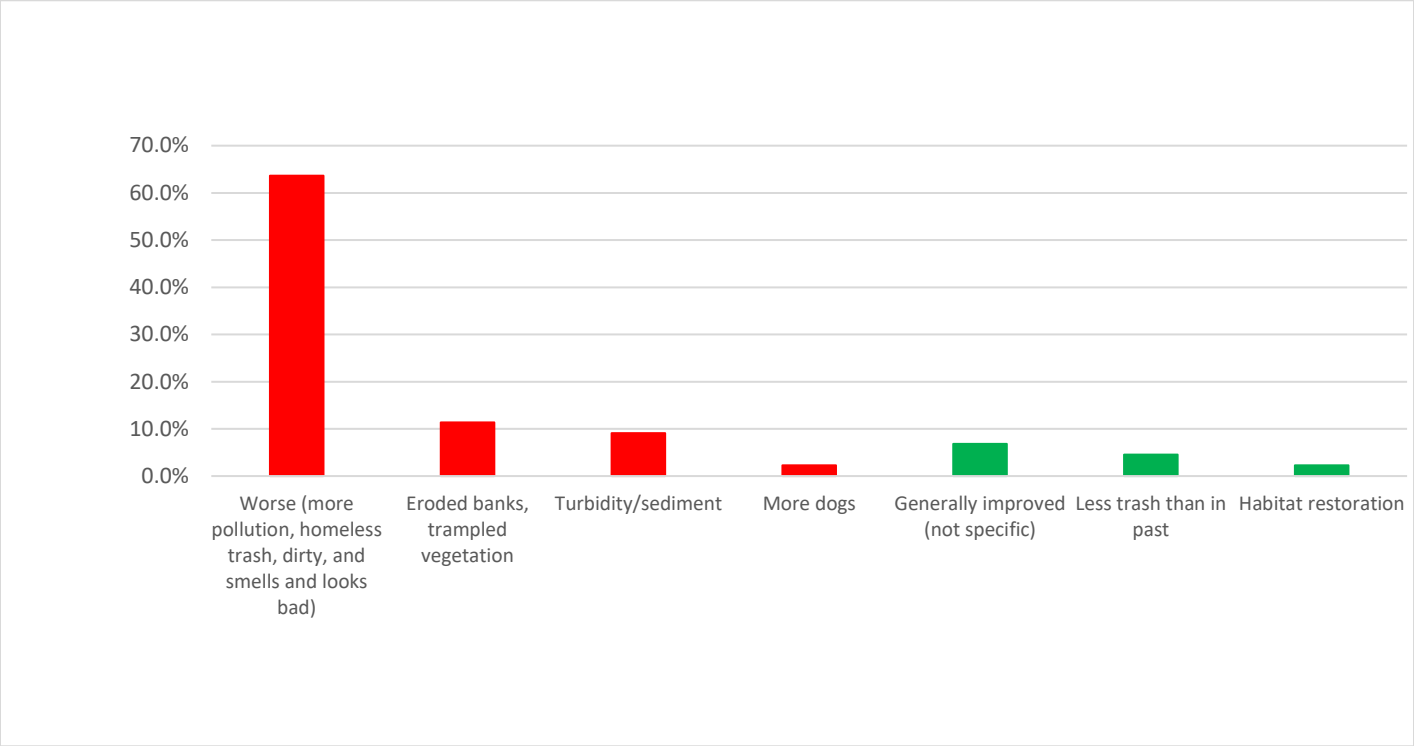

Figure 9 Comments on negative (red) and positive (green) changes, n=44

Negative Changes in Campbell Creek	**N=44**	**Percentage**
Worse (more pollution, homeless trash, dirty, and smells and looks bad)	28	63.7%
Eroded banks, trampled vegetation	5	11.5%
Turbidity/sediment	4	9.1%
More dogs	1	2.1%
Positive Changes in Campbell Creek		
Generally improved (not specific)	3	6.9%
Less trash than in past	2	4.6%
Habitat restoration	1	2.1%

Table 10 Comments on negative and positive changes in Campbell Creek

Since this is a question that involves change over time, it is worth bringing up some of the history in regard to water quality that was mentioned by a few respondents. The Campbell Creek Classic[9] was an annual boat race that began in the late 60s and was ended in 1986 because of raw sewage in the creek. In their minds, Campbell Creek has improved relatively speaking. Another brought up a former trailer park on Tudor that dumped raw sewage into the creek, but I have not located it. There was one on Tudor Rd. down in Spenard which may be the one referenced.

10. Would you drink water from Campbell Creek?

There was a resounding "NO' from 91% (145) of the respondents, and 15 (9%) answered yes. Eight added the caveat that they would only if it was filtered. Only one respondent said yes as they "drink the local water in China and S. America", and two said they would if far enough upstream. (See Figure 10)

11. Would you let your children play in Campbell Creek?

Sixty-eight (43%) said "NO", the same percentage said "YES", and the balance answered under "Other" 24 at 15%. These were conditional, and had to do with the length of time (short), the location (east of the New Seward or Lake Otis), limited contact to feet up to knees, if no warning signs are posted, and if they were washed or bathed afterwards. One person said, "I even bathe the dog after being in the creek". (See Figure 10)

12. Would you let your dog swim in Campbell Creek?

One hundred and three (64%) said yes, while 37 or 23% said no. Twenty answered "Other", of which seven didn't have dogs. Of the remainder, some said they wouldn't due to the potential of damaging salmon redds or introducing pet waste into the creek. A few commented that while they wouldn't encourage it, dogs can sometimes find their way in (assuming they're off leash). (See Figure 10)

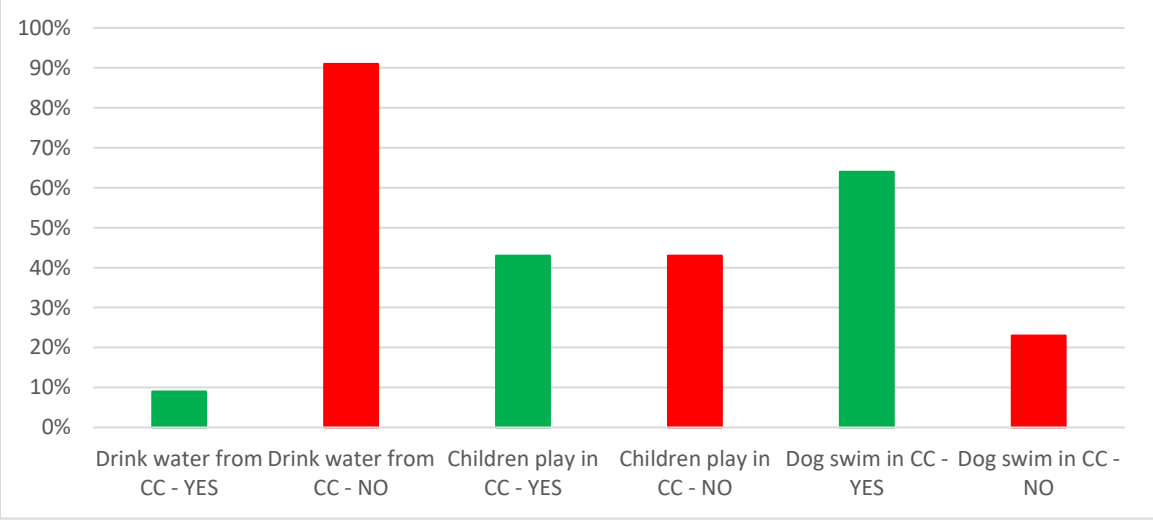

Figure 10 Combined answers from questions 10, 11, and 12 for drinking water from, allowing children to play in, or dogs to swim in Campbell

[9] https://www.latimes.com/archives/la-xpm-1985-01-18-mn-8760-story.html

Question 10	Responses	Percentage
Drink water from CC - YES	15	9%
Drink water from CC - NO	145	91%
Total responses	160	100%
Question 11		
Children play in CC - YES	68	50%
Children play in CC - NO	68	50%
Total responses	136	100%
Question 12		
Dog swim in CC - YES	103	74%
Dog swim in CC - NO	37	36%
Total responses	140	100%

Table 11 Combined answers from questions 10, 11, and 12 for drinking water from, allowing children to play in, or dogs to swim in Campbell

13. If you had one thought on how to improve the WATER QUALITY of Campbell Creek, what is it?

There were 130 valid responses to the question. Again, the impact of homeless on Campbell Creek maintains first place with 37 (28.5%) responses. A promising second suggestion with 34 (26.2%) responses is summarized as a variety of ways to protect the creek. Seventeen of these 34 responses specifically mentioned maintaining, improving, or adding stream buffers. Other comments for this response include decreasing impervious surfaces, adding more institutional controls, and improving stormwater runoff treatment.

Although pet waste issues were rarely mentioned in the earlier survey questions except for question 8 where dogs were cited as the major culprit for decreased water quality, 32 (24.6%) now said that there was a need for more pet waste stations, enforcement of leash and pet waste ordinances, and signage. It is gratifying that 13 (10%) thought that public awareness through outreach and education can help improve water quality, and additional creek cleanups was another welcome suggestion by 6 (4.6%).

The three (2.3%) responding to septic made the following suggestions:

1. Make connecting to municipal sewer system more cost effective
2. Mandatory monitoring and inspections of septic systems with fines
3. Better management of septic systems

Two (1.5%) proposed enforcement of protective ordinances, and 1 (.8%) suggested draining Campbell Creek to allow it to return to its natural creek landscape, 1 (.8%) said add more signage, and 1 (.8%) wanted strainers removed.

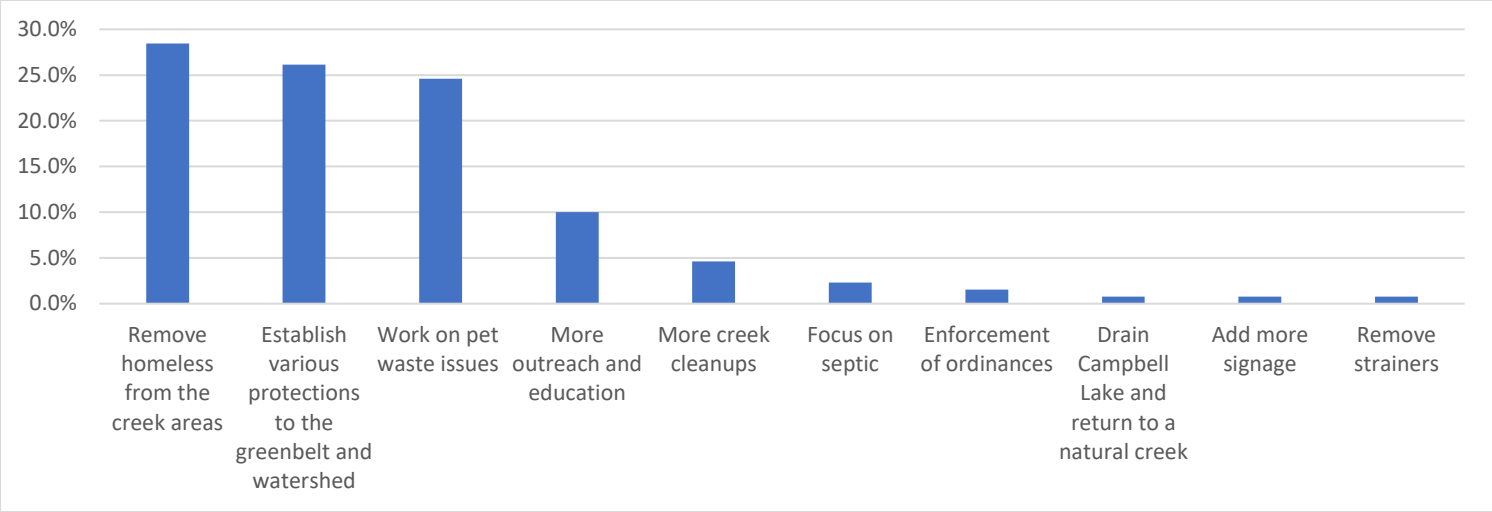

Figure 11 Suggestions for improvements along Campbell Creek (n=130)

How to Improve Water Quality Suggestions	N=130	Percentage
Remove homeless from the creek areas	37	28.5%
Establish various protections to the greenbelt and watershed	34	26.2%
Work on pet waste issues	32	24.6%
More outreach and education	13	10.0%
More creek cleanups	6	4.6%
Focus on septic	3	2.3%
Enforcement of ordinances	2	1.5%
Drain Campbell Lake and return to a natural creek	1	0.8%
Add more signage	1	0.8%
Remove strainers	1	0.8%

Table 12 Suggestions for improvements along Campbell Creek

Conclusion

The majority of the responses in this survey were thoughtful and showed that the respondents have a good grasp of the issues in regard to Campbell Creek's water quality. Those responding were primarily long-time residents, lived in the Campbell Creek or neighboring Chester Creek watersheds and all except 7 have spent time on Campbell Creek.

Their activities along the creek are largely recreational and quite varied, and many participated in some type of water activity in the creek. In regard to improving recreational opportunities, the majority commented on how the homeless situation affected them. This includes the unsightliness of camps and associated trash along with personal safety concerns.

The assets and detractors provided some important insight into how special Campbell Creek is to users. Overall, Campbell Creek is a haven in urban Anchorage for connecting to nature, and it is truly appreciated for that. People's enjoyment is also hindered, again, by the homeless and their trash along

with concerns about personal safety and impacts on water quality. Of the overall 203 comments for detractors (multiple comments allowed) 161 focused on homeless issues.

In eliciting responses to the primary sources of *E. coli*, dogs topped the list with humans-directly and leaking septic systems following closely. There is certainly a good understanding of the principal culprits.

For the question about changes over time, those who thought it was worse cited more pollution, homeless trash, smells, and just general "looking bad", although the majority (63%) said they did not see any changes.

The three questions about drinking from Campbell Creek and allowing children and dogs into the creek provided fairly predictable responses. As to drinking out of the creek, an overwhelming number said "no", a few added caveats, and one said they'd drink anywhere in the creek without filtering as they aren't concerned about drinking local water in China and South America. Respondents loosened up somewhat with allowing children to play in the creek, and by the time it focused on dogs they were much more comfortable with creek interactions.

The most significant responses are from the final question which asks for suggestions about improving water quality. The top one is removing homeless from the creek areas and is no surprise as this has been a recurring theme throughout the entire survey. Even though homeless campers have been in the greenbelts and along the creeks for the past 10-15 years, their presence has been very limited. If this survey was done 10 years ago, it would be very surprising if there were any comments about them at all. Now that the homeless population has grown to what the Municipality of Anchorage Homeless Coalition estimates in 2019 as 1,272[10] (this includes those sheltered and unsheltered) it has become much more visible as well as leaving a very large and highly visible impact. A summer 2019 point-in-time (PIT) of 246 unsheltered and panhandling homeless means that they are becoming more visible in the favored camping locations along our waterways.

Almost an equal amount of people who pointed out homeless campers also had some very important and relevant comments that suggest a good understanding of riparian areas. These include protecting and restoring stream buffers and seeking ways to limit impermeable surfaces while establishing more limits to stormwater runoff. The comments show that information that is important to watershed protection is getting out to the public, and that awareness is good news.

10 muni.org/Departments/Assembly/SiteAssets/Pages/Committee%20on%20Homelessness/20191015_Summary_Summer%20Community%20Count_final.pdf