

*Perceptions and Expectations of  
Lakeside Property Owners in Lakeland County  
and the Town of Lac La Biche.*

*Lac La Biche Watershed Summary Report  
November 2002*

**Produced by:**

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## Table of Contents

Section	Page
<b>Background</b> .....	1
<b>Objectives</b> .....	2
<b>Overview</b> .....	3-4
<b>Findings</b> .....	5-13
Participants of Survey.....	5
Observed Changes.....	6
Perceived Condition of Lac La Biche Lake.....	6
Concern for the Future Condition of the Lac La Biche Watershed.....	8
Perceptions on How Factors Affect the Quality of the Lac La Biche Watershed.....	9
Values of Factors Regarding Lac La Biche Lake.....	11
Recreational Use of Lac La Biche Lake and Surrounding Area.....	12
Quality of Lac La Biche Lake Affecting Recreational Use.....	13
Changes in Use of Lac La Biche Lake.....	14
Regulations.....	14
<b>Summary</b> .....	15
<b>Acknowledgements</b> .....	16
<b>List of Appendices</b> .....	17-18
<b>Appendix 1</b> .....	19-22
<b>Appendix 2</b> .....	23-28

## **Background**

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Lac La Biche Lake, with a drainage basin of 4040km<sup>2</sup>, is the largest of the 152 lakes that are located within Lakeland County. It is the primary water supply for 4,959 full time Lakeland County residents, as well as 3,080 residents from the Town of Lac La Biche, and the Hamlet of Plamondon. Over the past few years, residents have raised concerns about the health of the watersheds in Lakeland County, and the direct quality of life they provide; primarily regarding the Lac La Biche Watershed due to its size, location, and the impact it has on the region's social and economic structures.

Many community organizations have formed throughout Lakeland County with the health of the Lac La Biche Watershed in mind. They have taken initiative to ensure preservation of water supply and quality of life within the Lakeland County region for future generations. Lakeland County has been working in cooperation with the "Healthy Lake Project", taking the necessary steps to preserve the watershed through a co-operative education and awareness program with watershed stakeholders. Also, the "Fisheries Enhancement Society", has taken interest in this project and has provided valuable historical information and research on water quality issues in regards to Lac La Biche Lake, as well as providing insight on possible fish habitat enhancement. Lakeland County, the Fisheries Enhancement Group, Cows and Fish, Alberta Environmentally Sustainable Agriculture Program (AESAP), Prairie Farm Rehabilitation Administration (PFRA)- Rural Water Development Program and the Agriculture and Food Council- Community Riparian Program, have provided the necessary funds and in-kind contributions required to conduct the various aspects of this truly community driven project. These groups are just a few that have been involved in the Lac La Biche Watershed/Riparian Management Module of Lakeland County. Interest towards water quality issues is continually growing as concerns for water supplies in the region and across Alberta increase.

With increasing support towards water quality issues, it has been acknowledged that there is a need for a Water Quality Restoration Program on the Lac La Biche Watershed. With this in mind, Lakeland County has formed the Lac La Biche Watershed Steering Committee to spearhead the "water quality goals and objectives" that have been identified by various community organizations and community members.

## Objectives

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1. To provide information to various committees and community members regarding community perceptions of the Lac La Biche Watershed.
2. To increase awareness throughout the community by identifying issues surrounding the water quality of the Lac La Biche Watershed, and expectations for the future.
3. To recognize concerns and/or issues within the community regarding impacts on the watershed and to set priorities for solutions.
4. To provide a preliminary report assessing the issues within the community; this will be used as a base reference in the evaluation process at the end of the 3 year water quality study.

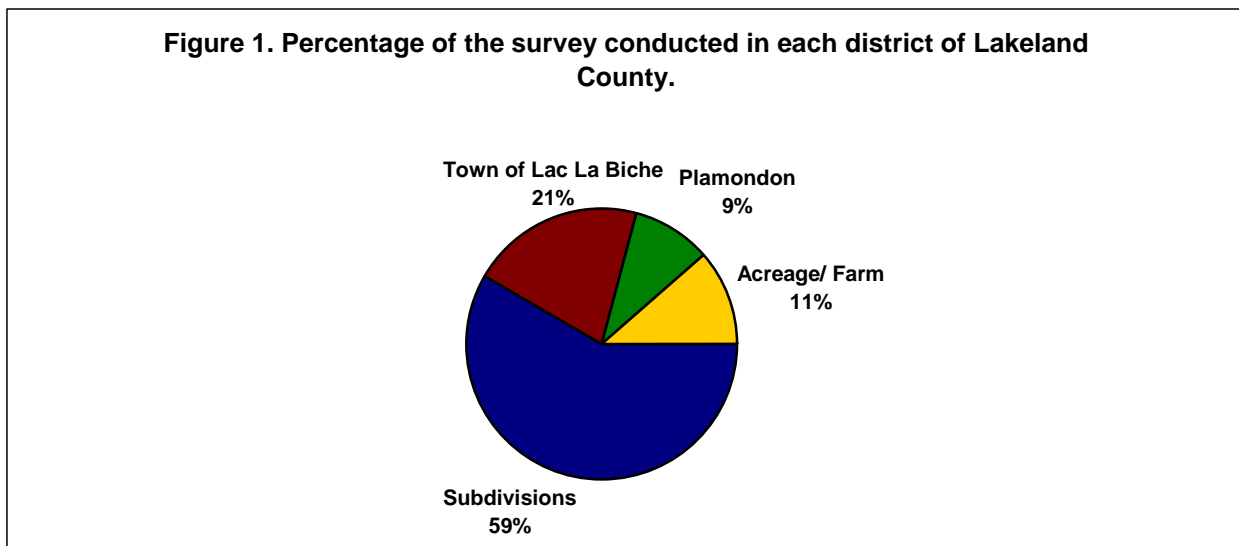
## Overview

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The preliminary survey was conducted to conclude the perceptions of community members, and to get an idea of where the education process in our community needs to be initiated. Questions on perception of the Lac La Biche Watershed, concern for the future of the watershed, recreational use of Lac La Biche Lake, and awareness of regulations were included in the survey. A copy of the Attitudinal Survey can be found in Appendix 1.

There were 183 participants surveyed between July 1<sup>st</sup> and August 31<sup>st</sup> of 2002, using a combination of telephone and door to door surveying. The door to door method was used when surveying subdivisions, the Town of Lac La Biche, and the Hamlet of Plamondon. This method involved a group of surveyors going to each district until they were able to survey approximately 10% of the homes within the district. There was no prejudice used when determining which homes would be surveyed. A phone survey was used to interact with farm and acreage owners as it was difficult to reach them at home at any given time. These individuals were randomly chosen from the area. Farm and acreage owners were given a choice of whether to complete the survey by phone or in person.

A representative sample of people residing in thirteen subdivisions, the Town of Lac La Biche, the Hamlet of Plamondon, and farms/acreages was taken to compare perceptions of people who may use the watershed for different reasons. Figure 1 displays the percentage of the survey conducted in each district.

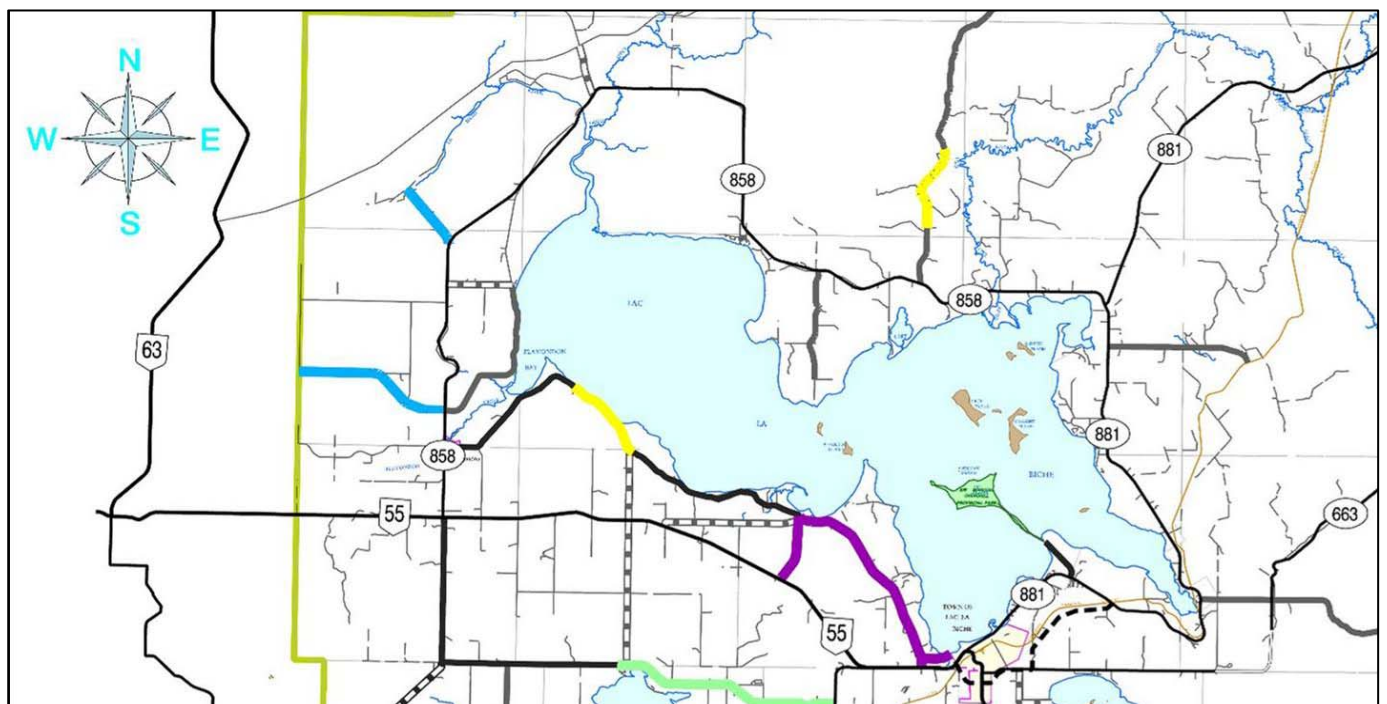


## Overview continued

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The study area for the Attitudinal Survey included individuals who currently reside within the Lac La Biche Watershed, primarily around Lac La Biche Lake (Figure 2).

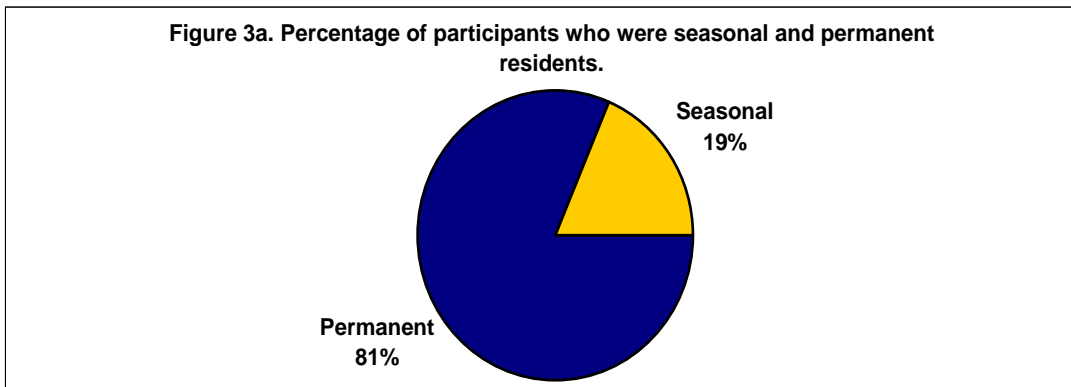
Figure 2. Map of Lac La Biche Lake



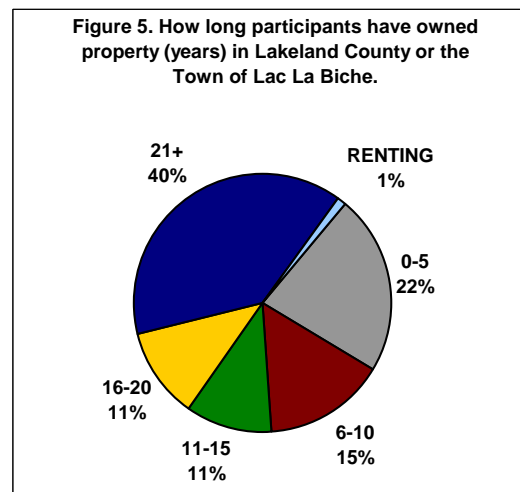
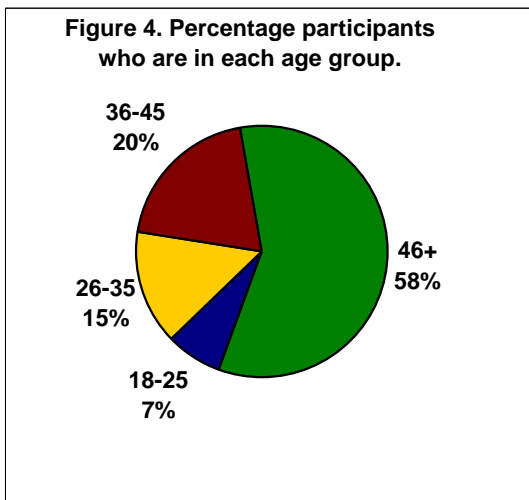
# Findings

## I. Participants of the Survey

Both seasonal<sup>1</sup> and permanent residents on the Lac La Biche Watershed were surveyed. In all, **81% were permanent residents and 19% were seasonal residents** (Figure 3a). When seasonal residents use their property in Lakeland County is shown in Appendix 2: Figures 3b-3c. It should be noted that the survey was conducted on weekdays during July and August, and may not be representative of all seasonal residents.



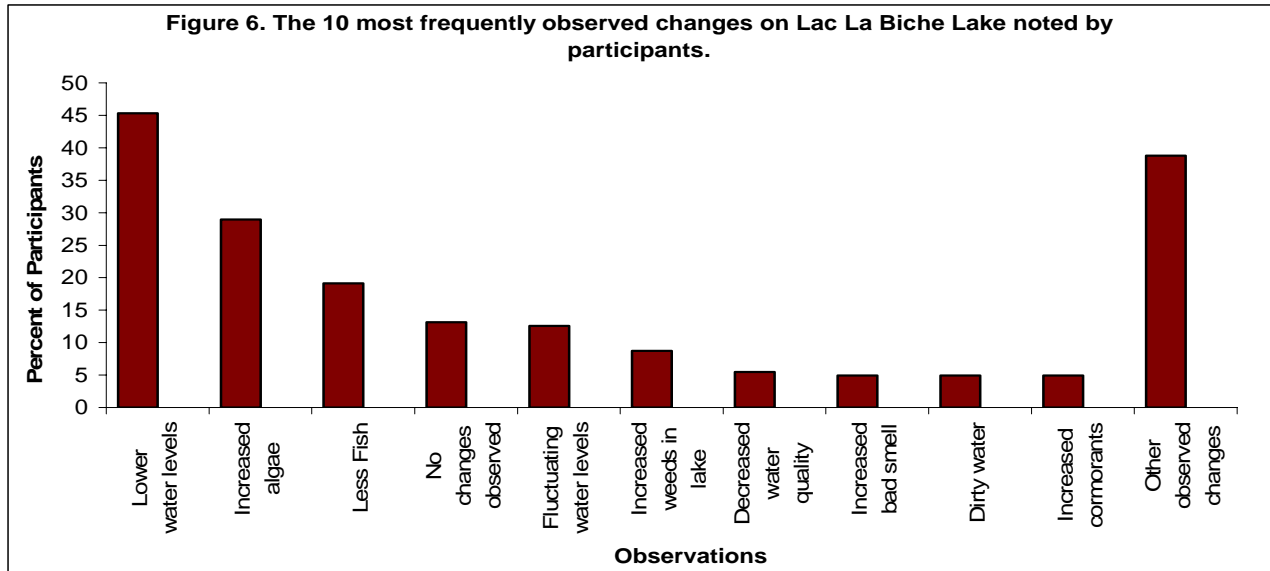
Participants were asked their age and how long they have owned property on or around Lac La Biche Lake; 58% of participants were over the age of 46 and 40% of the participants have owned their property for 21+ years. Other age categories and how long participants have owned property are shown in Figure 4 and Figure 5 respectively.



<sup>1</sup> Participants who do not permanently reside within the Lac La Biche Watershed.

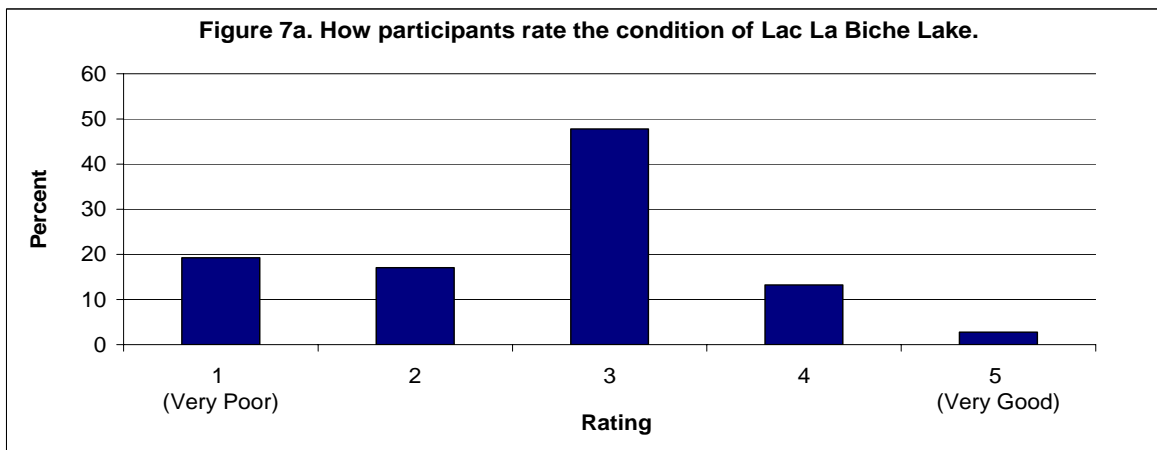
## II. Observed Changes

In total, participants commented on 43 observed changes regarding the Lac La Biche Watershed (Appendix 2: Table 1). The ten most frequent observed changes are shown in Figure 6. “Other observed changes” include the remaining 33 observed changes noted by participants, and each represents less than 2% of the total observations.

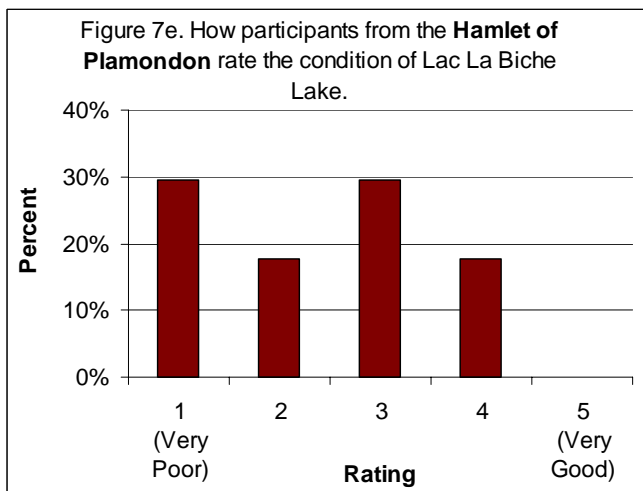
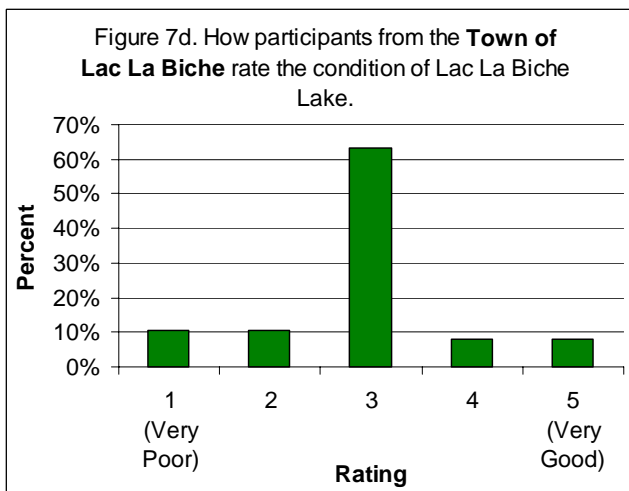
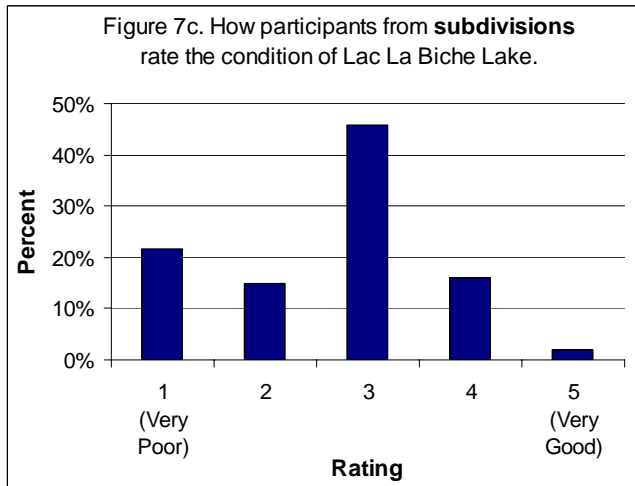
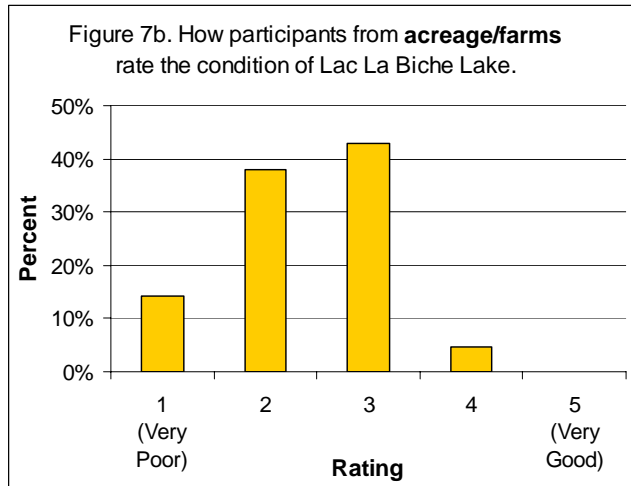


## III. Perceived Condition of Lac La Biche Lake

Figure 7a displays how participants perceive the condition of Lac La Biche Lake on a scale of 1 (“very poor”) to 5 (“very good”). Even though there were no set descriptions for 2, 3 or 4, we will presume that 3 is “average”, 2 is “below average”, and 4 is “above average”. **48% of the participants rated the lake as “average”, over 36% of the participants rated the lake as “below average” (1 or 2), and only 16% of participants rated the lake as “above average” (4 or 5).**



Figures 7b-7e display a rural/urban split<sup>2</sup>. Residents in rural locations perceive the lake to be in a poorer condition than residents closer to urbanized areas. There were no residents of acreages/farms who rated the lake as “very good”. However, 2% of subdivision residents and almost 8% of Lac La Biche residents rated the lake as “very good”.

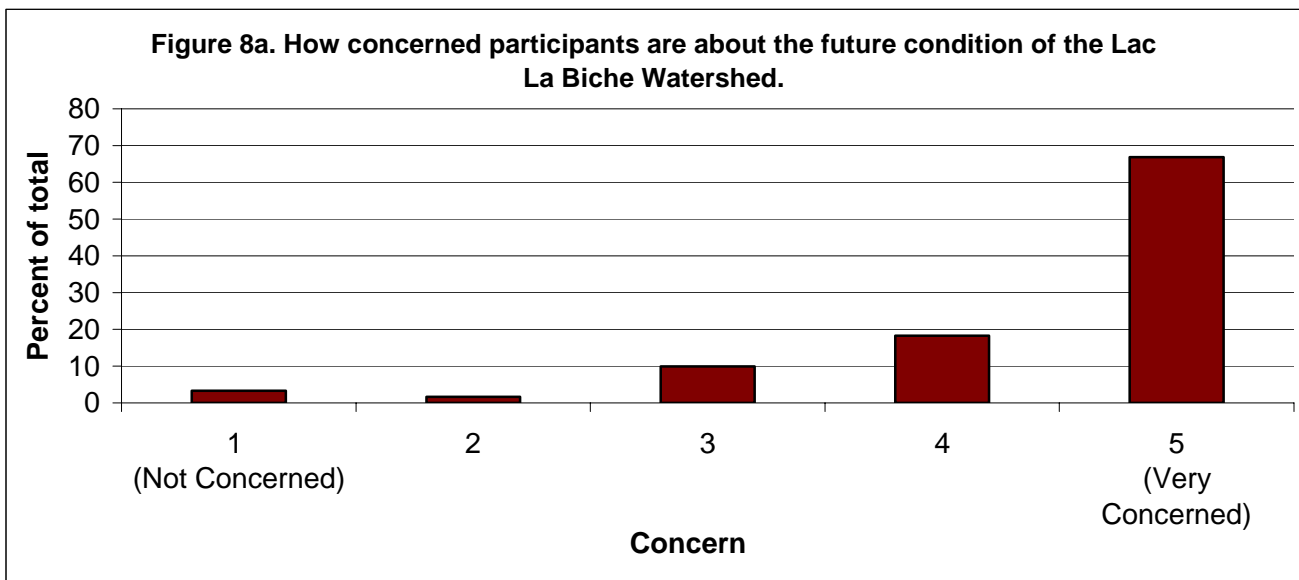


When comparing how long participants have owned property and how they perceive the condition of Lac La Biche Lake, there is a direct correlation between length of ownership and consistency of perceptions. Participants who have owned property 11-15 years have scattered ratings, whereas the majority of participants who have owned property for 21+ years rated the lake as “average” (Appendix 2: Figure 7f). Comparisons between age groups and how they perceive the condition of Lac La Biche Lake is similar to that of how long participants have owned property; the consistency of perceptions increase as age increases (Appendix 2: Figure 7g).

<sup>2</sup> Referring to a pattern where there is a difference seen when moving from areas of lower population density (rural) to areas of a higher population density (urban). In this survey: acreages/farms vs. subdivisions vs. Hamlet of Plamondon vs. Town of Lac La Biche.

#### IV. Concern for the Future Condition of Lac La Biche Watershed

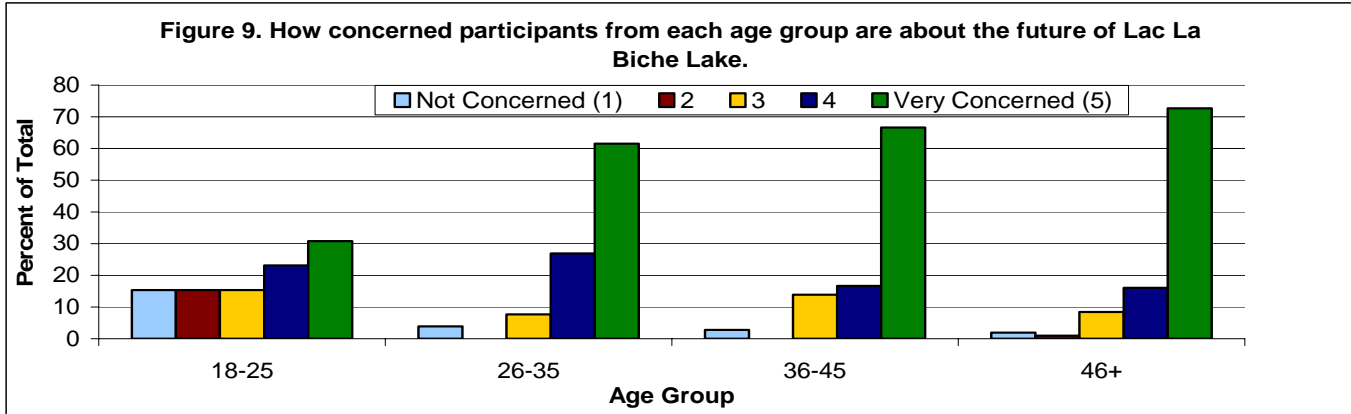
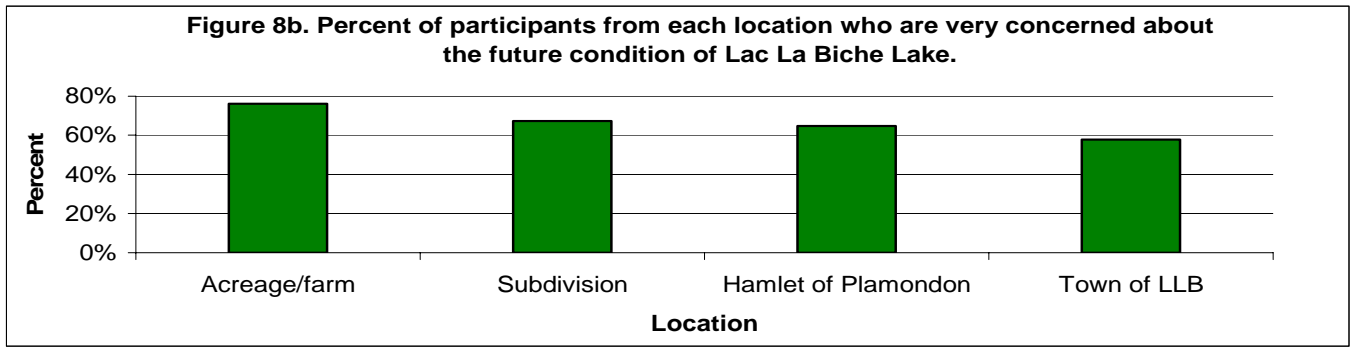
Participants were asked how concerned they were about the future condition of the Lac La Biche Watershed (Figure 8a), and reasons for their concern. **Of the participants surveyed, 85% rated a 4 or 5 (“very concerned”) and less than 5% rated a 1 or 2 (“not concerned”).** One of the most frequent reasons for concern was the *loss of recreational enjoyment*. Others reasons include: *concern for natural areas and wildlife around lake, preserving the lake for future generations, health reasons (drinking water, swimmers itch), and decreasing value of their property*. Participants who were not concerned indicated reasons such as: *they are moving away from Lac La Biche Lake, they do not use the lake, there are too many politics involved, or no reason was given*.



There was no significant difference as to concern in comparison with how long participants have owned property. However, participants who have owned property in the categories of 6-10 years and 11-15 years had a slightly higher percentage of “very concerned” individuals.

Figure 8b displays the percentage of participants from each location who are “very concerned” about the future condition of the Lac La Biche Watershed. Although there was no significant difference between the percentages of participants from each location who were “very concerned”, a rural/urban split is once again seen. There were slightly more participants from rural areas (acreage/farm, subdivisions) who were “very concerned” for the watershed (76%, 67%) than the Hamlet of Plamondon and Town of Lac La Biche (65%, 58%).

Figure 9 displays how the future concern for the watershed increased with age.



## V. Perceptions on How Factors Affect the Quality of Lac La Biche Watershed

Figure 10a illustrates how participants perceived selected factors that may affect the Lac La Biche Watershed. **“Septic pump outs” is shown to be a major issue, as 65% of the participants perceived it as having an “extreme effect”.** In the survey, “septic pump outs” included: septic mounds, septic fields, effluent discharge, sewage lagoons, as well as improper sewage disposal. Another factor perceived by a large percentage of participants (54%) to have an “extreme effect” on the watershed was “Natural Cycles”. The “causeway” appears to be a controversial issue as the perceptions are even in both “unaffected” and “extremely affected”. The issue of “Lakeshore vegetation” may have been unclear in meaning to participants, based on the evenly mixed perceptions received. Several participants noted that there was not a lot of industry around the watershed, but felt if there was it would have an “extreme effect” on the Lac La Biche Watershed. “Landscaping” and “recreational use” were the factors perceived to have the least effect on the quality of the Lac La Biche Watershed. There was an opportunity for participants to present other factors which they believed had an effect on the quality of the Lac La Biche Watershed, these included: *pollution, town water consumption and sewage disposal, increased salt from roads, commercial fishing, and increased cormorants.*

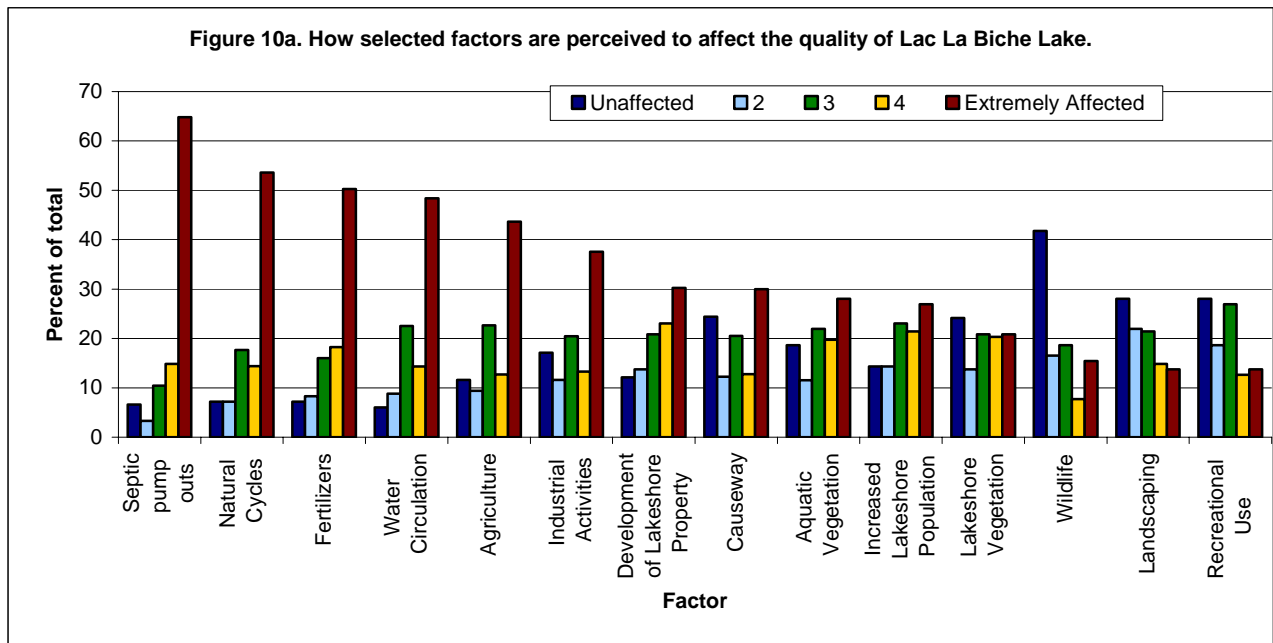
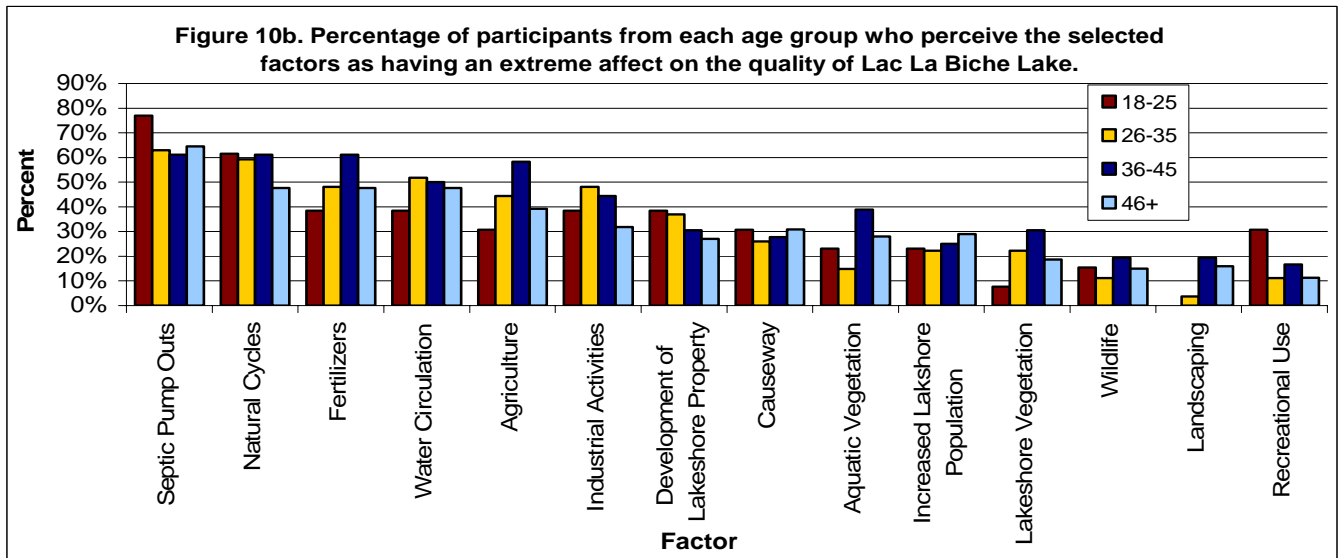
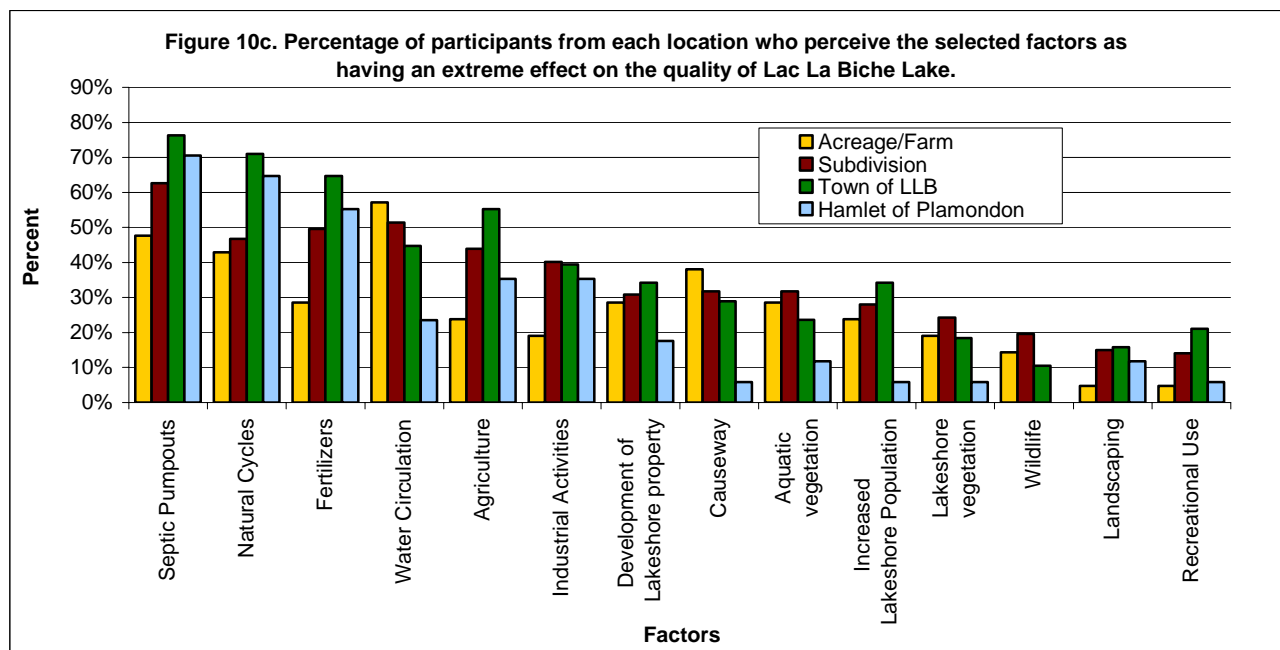


Figure 10b displays the differences between how age groups perceive the factors that may affect Lac La Biche Lake. “Septic pump outs” and “natural cycles” had the highest percent of participants in all age groups who perceived them as having an “extreme effect”. There were 15% to 30% more participants in the age group 36-45 who perceived “agriculture” as having an “extreme effect” on the Lac La Biche Watershed. “Landscaping” was perceived as having the least effect on the watershed by all age groups. “Recreational use” was perceived as having little effect on the watershed in all age groups, except the 18-25 age group.



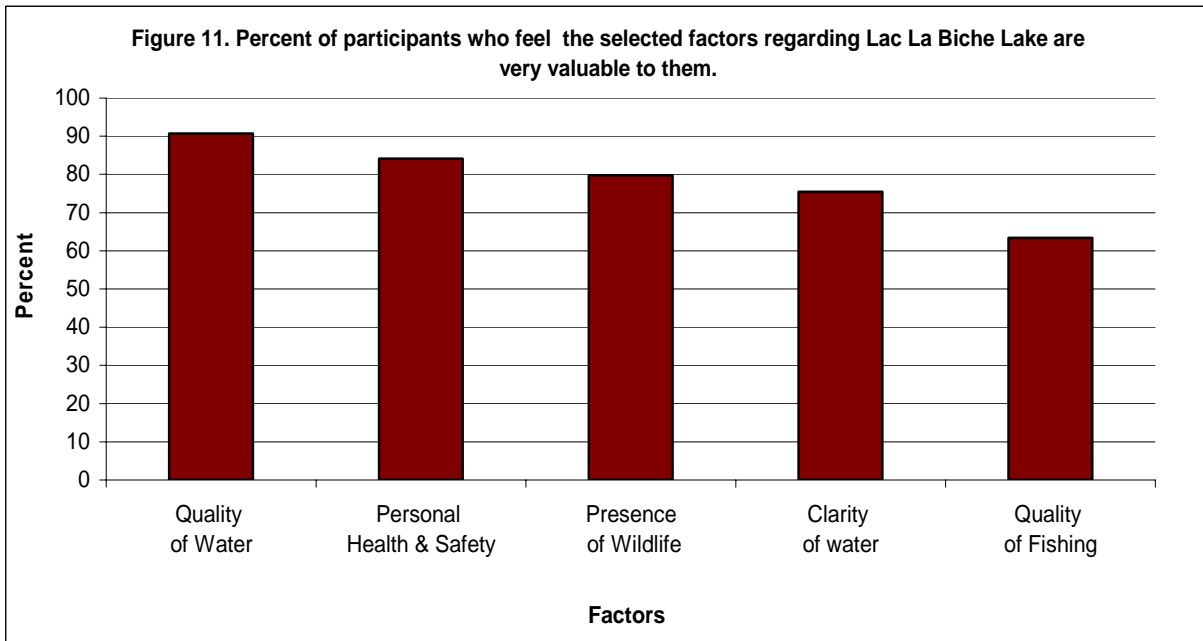
The differences between locations and perceived effects of factors are shown in Figure 10c. A rural/urban split is evident in regards to contributing factors. There were 30% more participants from the Town of Lac La Biche than from acreages and farms who perceived “septic pump outs” as having an “extreme effect” on the Lac La Biche Watershed. Also, “water circulation” and the “causeway” appear to be a greater issue amongst acreage/farm owners than amongst other participants surveyed. There is a distinguishable difference in the perception of “agriculture” and its effect on the watershed, shown by the fact that there are over 30% more participants from the Town of Lac La Biche than from acreages and farms, who perceive “agriculture” as having an “extreme effect” on the watershed.



## I. Value of Factors Regarding Lac La Biche Lake

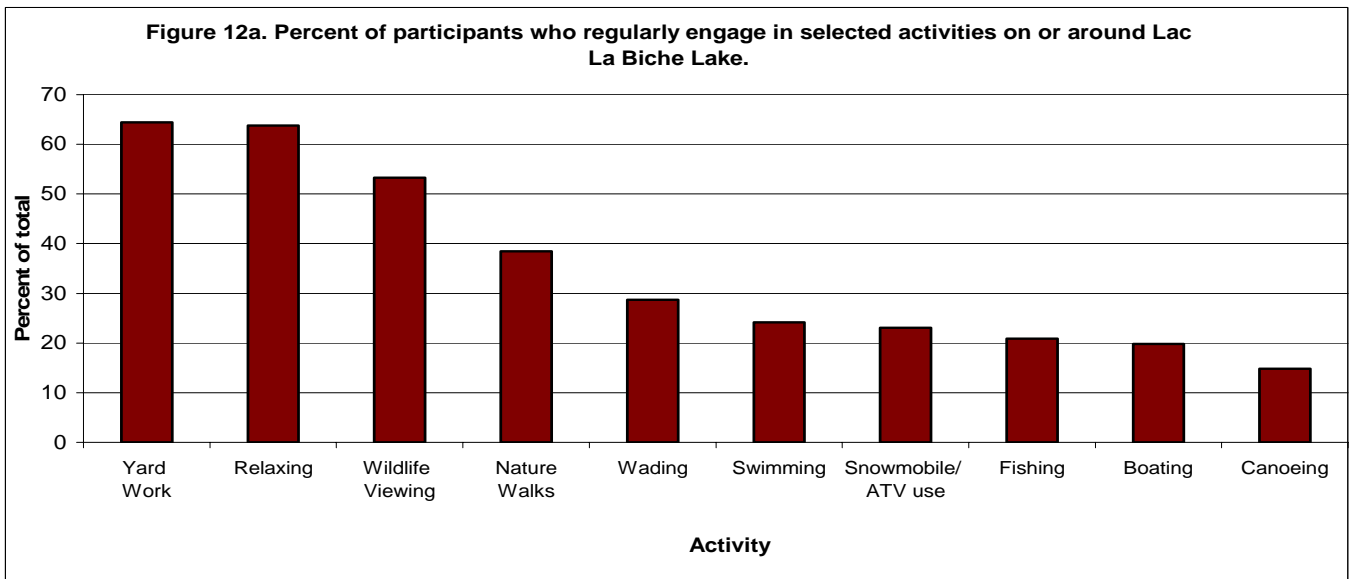
Figure 11 displays the perceived value of selected factors pertaining to Lac La Biche Lake. All five of these selected factors were recognized as being “very valuable” to most participants. However, **“quality of water”** was rated as **“very valuable”** to the majority of participants (90%), and **“quality of fishing”** was rated as **“very valuable”** to a substantially smaller amount of participants (63%). Other factors participants noted as being “very valuable” in regards to the Lac La Biche Watershed included: *scenery, privacy, wetlands around the lake, diversity of flora and fauna*<sup>3</sup>, *recreational enjoyment, stable water levels, and public access to the lake.*

<sup>3</sup> Flora refers to plant life and fauna refers to animal life.

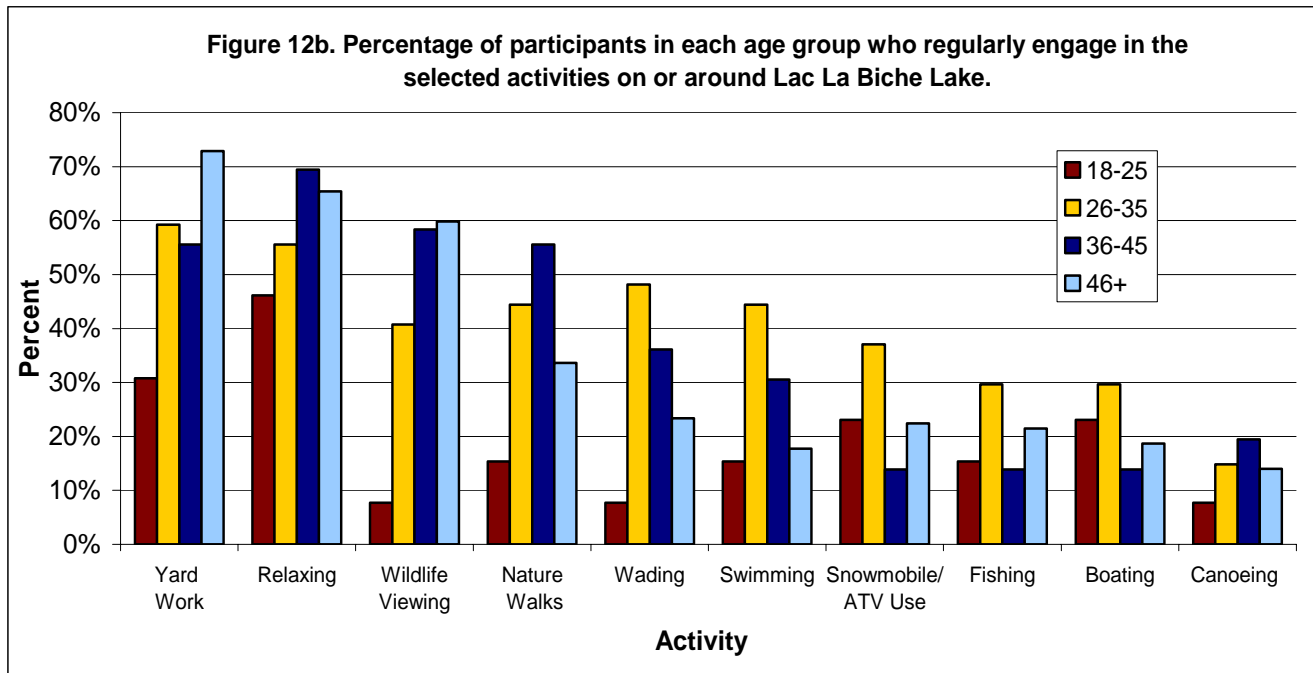


## **VII. Recreational Use of Lac La Biche Lake and Surrounding Area**

Figure 12a shows that there is **40% more regular participation in “yard work”, “relaxing” and “wildlife viewing” than there was in “boating”, “fishing” and “canoeing”**. Several participants noted that *Lac La Biche Lake is too shallow, there are too many sandbars to use a motorized craft, and water quality deters use of the lake.*



Differences between age groups and recreational use are shown in Figure 12b. These findings indicate that land activities increase in popularity as age increases, and water based activities increase in popularity as age decreases. There is also a trend of increasing participation in “wildlife viewing” as age increases. The 26-35 age group, “regularly” participates in the majority of recreational activities on or around Lac La Biche Lake.



In almost all activities, the Hamlet of Plamondon participants had the lowest percentage of individuals who “regularly” participate in recreational activities on or around Lac La Biche Lake. It should be noted that the Hamlet of Plamondon is further away from Lac La Biche Lake than other areas surveyed, and access to the lake is limited at this point. Subdivision participants have the highest percentage of individuals who “regularly” participate in recreational activities on or around Lac La Biche Lake.

## **VIII. Quality of Lake Affecting Recreational Use**

**Over 83% of participants felt the quality of Lac La Biche Lake directly affects the recreational use of Lac La Biche Lake** (Appendix 2: Figure 13); of which, 73% indicated the comments: *less/no use when green and more use when clear*. The comment: *low water levels and increased weeds prevent boat use* was indicated by 9% and *the quality of fishing is no good so people don’t fish* was indicated by 8%.

## **IX. Changes in Use of Lac La Biche Lake**

**Approximately 59% of participants stated that their uses of Lac La Biche Lake have changed since they first resided in the area; of which, 19% indicated increased use, and 78% indicated decreased use.** Reasons for increased use include: *individuals now living by lakeshore, they have young children, they now have more time, money and recreational equipment, and they find there is less traffic on Lac La Biche Lake than on other lakes.* Reasons for decreased use of the lake included: *lifestyle changes (children have grown up, participants have grown older), no more swimming because of algae and weeds, no boating because of low water levels, and no fishing because the quality of fishing is poor.*

## **X. Regulations**

The survey included questions about awareness of Environmental Reserves and specific regulations. Varying responses were received as indicated in Appendix 2: Figures 15a-15c. Conflicting responses were seen in the awareness and purpose of Environmental Reserves. Several participants who indicated “yes” to knowing about Environmental Reserves, responded “no” to knowing the purposes of Environmental Reserves. **Of the 95% of the participants who were aware that rules and regulations regarding lakeshore development existed, only 77% were “somewhat familiar” or “very familiar” with the parameters of them** (Appendix 2; Figure 16a-16c).

**Over 99% of participants felt that rules and regulations regarding lakeshore development were necessary.** The most frequent reasons given for the need of regulations were: *to preserve the lake and surrounding areas for the future, to prevent abuse of nature, and to regulate people’s actions.* The need for enforcing the existing regulations was also mentioned numerous times.

## Summary

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The findings of this survey indicate that there is a great deal of concern for the future of the Lac La Biche Watershed. It is also indicated that more participants perceived the quality of the Lac La Biche Watershed as “poor” or “average” than as “good”. This perception may be related to the observed changes noted by the participants and the subsequent recreational activities. The three most common observed changes were: *lower water levels, increased algae* and *less fish*. These can be directly related to recreational activities on Lac La Biche Lake. Several participants felt that because of these changes, their use of Lac La Biche Lake had decreased. There were various levels of consistency with factors that affect the watershed community. As indicated, there are differences between age groups, as well as various locations, regarding the perception of the Lac La Biche Watershed, what factors affect it, and expectations for the future of the watershed. The following points can be reiterated from the results:

- 81% of participants were permanent residents and 19% were seasonal residents;
- 48% of participants perceive Lac La Biche Lake as “average”;
- 85% of participants are concerned for the future condition of the Lac La Biche Watershed;
- 65% of participants felt “septic pump outs” had an “extreme effect” on Lac La Biche Lake;
- 40% more participation in land based recreational activities, than in water based activities;
- 90% of participants felt “quality of water” was “very valuable”, 63% felt “quality of fishing” was “very valuable”;
- 83% of participants felt the quality of Lac La Biche Lake directly affects the recreational use;
- 59% of participants indicated their uses of Lac La Biche Lake have changed since they first resided in the area, of which 19% indicated increased use and 78% indicated decreased use;
- 95% of participants were aware that regulations regarding lakeshore development exist, of which 77% were “somewhat familiar” or “very familiar” with specific regulations;
- 99% of participants felt that regulations regarding lakeshore development are necessary.

The findings of this survey will provide important information regarding community concerns and perceptions of the Lac La Biche Watershed. These findings can be used to enhance the effectiveness of awareness programs by knowing who and what the programs should focus on. It is hoped that by having conducted this survey and having provided information, people will want to become involved in some part of the Lac La Biche Watershed/Riparian Management Module. By informed involvement of community members and organizations, greater awareness and success of water quality issues and restoration programs can be achieved.

## **Acknowledgements**

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Lakeland County would like to thank all the participants who took the time to be involved with the Attitudinal Survey. Special thanks go out to the following individuals and organizations that had an active role in providing technical information, support and/ or conducted the survey:

Gerry Ehlert – Public Lands; The Healthy Lake Project Committee; The Fisheries Enhancement Group; Prairie Farm Rehabilitation Administration (PFRA), Alberta Environmentally Sustainable Agriculture Program (AESAP); Lakeland County Staff (Cecile Joncas, Lucien Cloutier, Barry Kolenosky, Candace Cadieux, Nicole Biollo, Kathleen Russell, Wendee-Rae Herrick).

## **List of Appendices**

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### **Appendix 1**

- Attitudinal Survey: Perceptions and Expectations of Lakeside Property Owners in Lakeland County/Lac La Biche.

### **Appendix 2**

- Table 1. All observed changes in Lac La Biche Lake noted by participants.
- Figure 3b. Percent of seasonal residents surveyed who use their property in each season.
- Figure 3c. Percentage of seasonal residents surveyed who use their property during each time.
- Figure 7f. Comparison between how long participants have owned property and how they rate the condition of Lac La Biche Lake.
- Figure 7g. How participants from each age group rate the condition of Lac La Biche Lake.
- Figure 13. Percent of participants who feel the quality of Lac La Biche Lake directly affects the recreational use of the lake.
- Figure 14. Percentage of participants who prune or cut trees to get a better view of Lac La Biche Lake.
- Figure 15a. Percentage of participants who were aware that there are Environmental Reserves around Lac La Biche Lake.
- Figure 15b. Percentage of participants who were aware that the purpose of Environmental Reserves is to protect and preserve a natural feature.
- Figure 15c. Percentage of participants who were aware that the purpose of Environmental Reserves is to protect habitat within the reserve and in any adjacent water bodies.
- Figure 16a. Percentage of participants who were aware that there are rules and regulations affecting the development of lakeshore areas.
- Figure 16b. How familiar participants were with building and development setback regulations.
- Figure 16c. How familiar participants were with private sewage disposal regulations.

## **List of Appendices continued**

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### **Appendix 3**

- Figure 6. The 10 most frequently observed changes on Lac La Biche Lake noted by participants.
- Figure 7b. How participants from acreages/farms rate the condition of Lac La Biche Lake.
- Figure 7c. How participants from subdivisions rate the condition of Lac La Biche Lake.
- Figure 7d. How participants from the Town of Lac La Biche rate the condition of Lac La Biche Lake.
- Figure 7e. How participants from the Hamlet of Plamondon rate the condition of Lac La Biche Lake.
- Figure 8a. How concerned participants are about the future condition of Lac La Biche Watershed.
- Figure 10a. How selected factors are perceived to affect the quality of Lac La Biche Lake.
- Figure 10c. Percentages of participants from each location who perceive the selected factors as having an extreme effect on the quality of Lac La Biche Lake.
- Figure 11. Percentage of participants who feel the selected factors regarding Lac La Biche Lake are very valuable to them.

## Appendix 1

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### *Perceptions and Expectations of Lakeside Property Owners in Lakeland County/Lac La Biche.*

#### *Survey Questions Summer, 2002*

#### **General Information:**

- 1) a. Are you a permanent resident in Lakeland County/Lac La Biche? (Yes/No)
- b. Where do you reside in Lac La Biche/Lakeland County?
  - I. Subdivision
  - II. Town
  - III. Acreage/Farm
- c. If you are a *seasonal* resident, what season(s) do you reside in Lac La Biche?
  - I. Summer
  - II. Fall
  - III. Winter
  - IV. Spring
- d. If you are not a permanent or seasonal resident, when do you use your property in Lac La Biche /Lakeland County?
  - I. Weekends
  - II. Days Off
  - III. Holidays
  - IV. Other (Please Specify)
- 2) How long have you owned property in Lakeland County/Lac La Biche?
  - A) 0-5years
  - B) 6-10 years
  - C) 11-15 years
  - D) 16-20 years
  - E) 21 years or more
- 3) What age group do you fall into?
  - A) 18-25 years
  - B) 26-35 years
  - C) 35-45 Years
  - D) Over 45 years
- 4) During the time you have lived here, what changes, if any, have you observed regarding Lac La Biche Lake?
- 5) How would you describe the condition of Lac La Biche Lake? (Please Rate 1-5; 1=Very Poor, 5=Very Good)
- 6a) How concerned are you about the future condition of the lake? (Please Rate 1-5; 1=Not Concerned, 5=Very Concerned)
- 6b) For what reasons? (i.e. Depreciate value of home/loss of recreational enjoyment etc.)

7a) In your opinion, to what extent do you feel the quality of Lac La Biche Lake is affected by the following factors?

Scale: 1= Unaffected to 5= Extremely Affected

	1	2	3	4	5
Landscaping					
Lakeshore Vegetation (i.e. trees, plants located on the bank)					
Aquatic Vegetation (i.e. cattails, reeds, milfoil)					
Agriculture (i.e. feed lots, pasture)					
Natural Cycles (i.e. precipitation, drought etc.)					
Recreational Use					
Increased lakeshore population					
Development of lakeshore property					
Septic Pump Outs					
Industrial Activities (i.e. oil & gas exploration)					
Water Circulation					
Causeway					
Fertilizers					
Wildlife (i.e. beaver dams etc.)					

7b) Are there any other factors? Please list.

8a) How valuable are the following characteristics to you in respect to Lac La Biche Lake?

Scale: 1 to 5; 1=Not Valuable, 5=Very Valuable

	1	2	3	4	5
Clarity of Water					
Quality of Water					
Quality of Fishing					
Personal Health/Safety					
Presence of Wildlife					

8b) Other areas that you feel are valuable: \_\_\_\_\_  
 \_\_\_\_\_

9) For a better view of the lake, would you: (Prune your Trees?/Cut down your trees?)

10) Do you practice safe refuelling? (Yes/No)

11) Do you clean up garbage from the shoreline, leaving natural and woody debris (i.e. Driftwood, Fallen trees)? (Yes/No)

**Recreation**

1) How often do you participate in the following activities on or around Lac La Biche Lake?

Scale: 1= Never 2=Occasionally 3= Regularly 1      2      3

Boating (motorized craft)			
Swimming			
Nature walks around lake area			
Fishing			
Relaxing (reading, entertaining, and family activities)			
Canoeing, kayaking, sailing			
Wading, exploring the lakeshore			
Yard work (gardening, mowing lawn)			
Bird or wildlife watching			
Snowmobile or ATV use			

2a) Do you feel that the quality of the lake directly affects the recreational use of the lake? (Yes/No)

2b) Please give an example.

3a) Have your uses and/or the amount you use the lake changed since you first resided in Lac La Biche/ Lakeland County? (Yes/No)

3b) Why?

**Rules and Regulations:**

1. Are you aware that there are Environmental Reserves around Lac La Biche Lake? (Yes/No)

2. Are you aware that the purpose of an Environmental Reserve is:

- a. To protect and preserve a natural feature (such as a bank or ecologically sensitive land?)  
(Yes/No)
- b. To protect habitat within the reserve and as well as habitat in any adjacent water body or course?  
(Yes/No)

3a) Are you aware that there are rules and regulations affecting the development of lakeshore areas? (e.g. permits, environmental reserves, shoreline boundaries, etc.) (Yes/No)

3b) If yes, how familiar are you with the following regulations?

Scale: 1= Unfamiliar; 2= Somewhat familiar; 3=Very familiar 1      2      3

Building/Development setbacks from water bodies/slopes  
Private sewage disposal regulations under Alberta Safety Codes Act


4.a) Do you feel that regulations regarding lakeshore development are necessary? (Yes/No)

4.b) Why or Why not?

**Interests:**

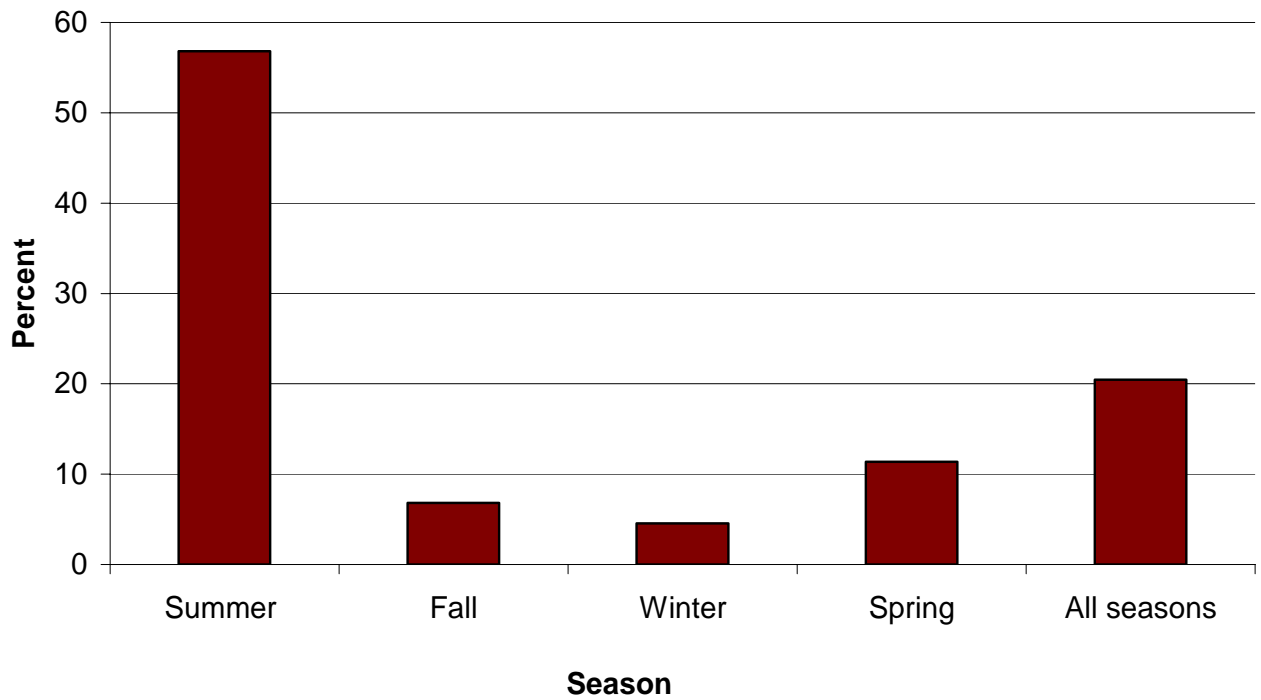
- 1) Would you like to receive information regarding related committees, programs /workshops?  
(i.e. Healthy Lake Committee, Fisheries Enhancement Group, Lac La Biche Birding Society, Cows and Fish, Alternative Land Use Workshops, Living By Water Workshops, Raising Your Own Fish Pond etc.)
  
- 2) Would you be interested in participating in a Riparian Health Assessment? (Yes/No)

## Appendix 2

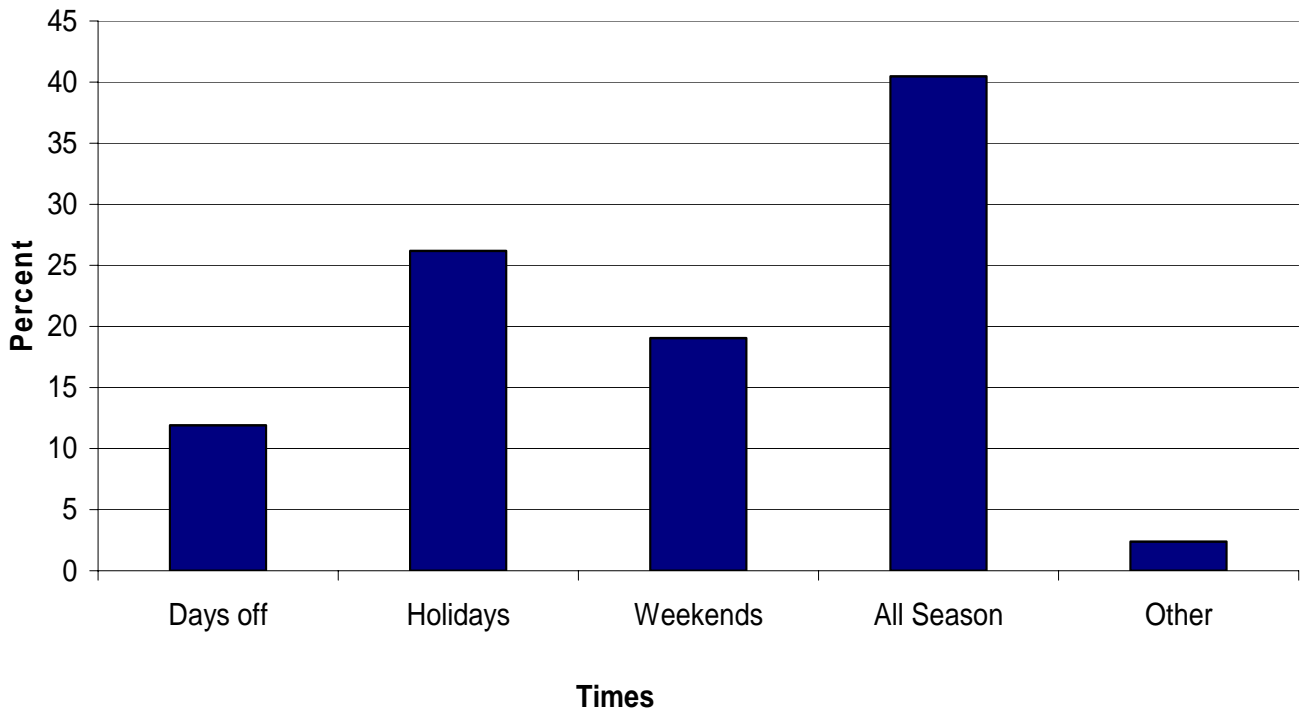
Table 1. All observed changes in Lac La Biche Lake noted by participants.

<b>Observed Change</b>	<b>Frequency</b>	<b>% of total persons surveyed</b>
Lower water levels	83	45.36
Increased algae	53	28.96
Less Fish	35	19.13
NONE	24	13.11
Fluctuating water levels	23	12.57
Increased weeds in lake	16	8.74
Decreased water quality	10	5.46
Increased bad smell	9	4.92
Dirty water	9	4.92
Increased cormorants	9	4.92
Less algae this year	6	3.28
Increased population	6	3.28
Algae present all summer/ lake not clear	5	2.73
Algae occurs earlier	5	2.73
Increased pollution from development and agriculture	5	2.73
More construction/development around lake/ clearing to water	5	2.73
Fish are improving Perch, tulibee	3	1.64
Sewers going directly into lake	3	1.64
Decreased circulation since causeway	3	1.64
Type of algae changed	2	1.09
Dead fish along shores when algae is thick	2	1.09
Increased activity on lake e.g. Boats	2	1.09
Wetlands being filled in	2	1.09
Decreased wildlife/waterfowl diversity	2	1.09
Decreased presence of wildlife	2	1.09
Decreased amphibians	1	0.55
Water levels same	1	0.55
Increased water quality	1	0.55
Fluctuation in algae levels	1	0.55
Less people and traffic	1	0.55
Increased deforestation	1	0.55
Increased salt from roads	1	0.55
Fewer cormorants	1	0.55
Increased fish flies	1	0.55
Increased insects	1	0.55
Increased blood suckers	1	0.55
No mink farms around lake	1	0.55
Can't water cows in lake	1	0.55
Big dock has had an effect	1	0.55
Weedier by big dock	1	0.55
Lake is turning into a slough	1	0.55
Increased trees	1	0.55
Accumulation of clay/silt along shore and in deeper water	1	0.55

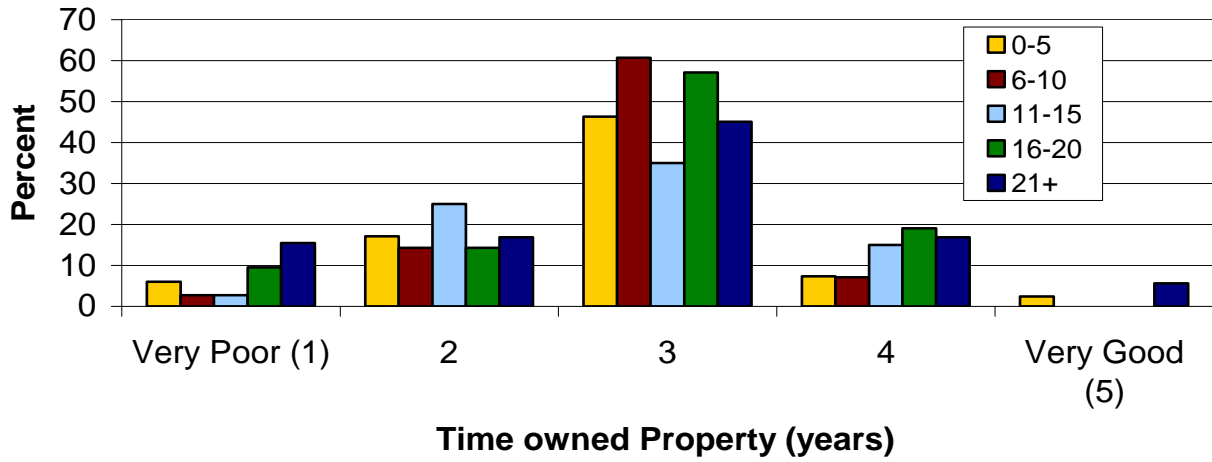
**Figure 3b. Percent of seasonal residents surveyed who use their property in each season.**



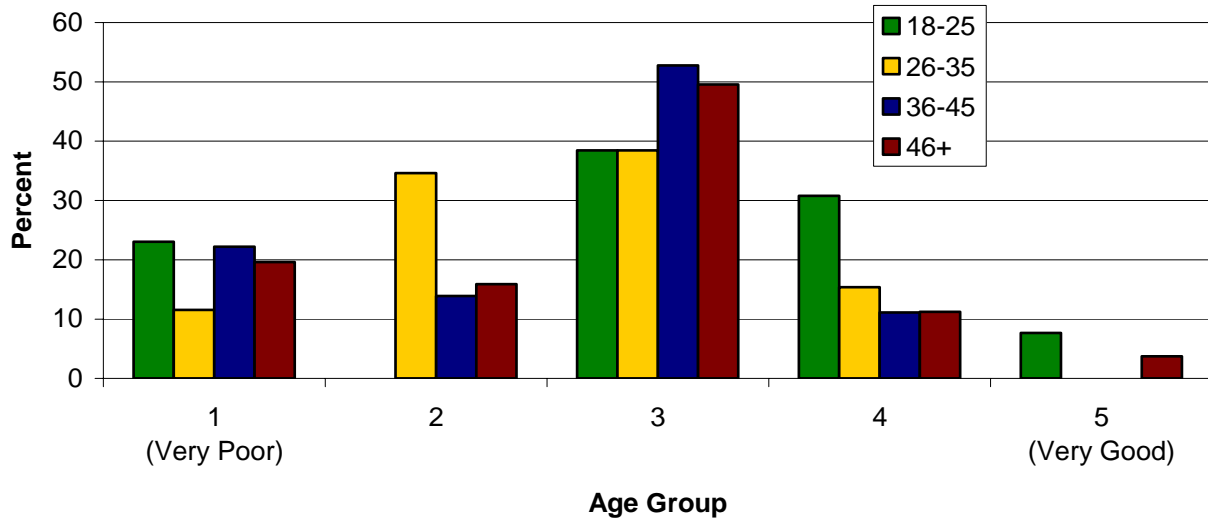
**Figure 3c. Percentage of seasonal residents surveyed who use their property during each time.**



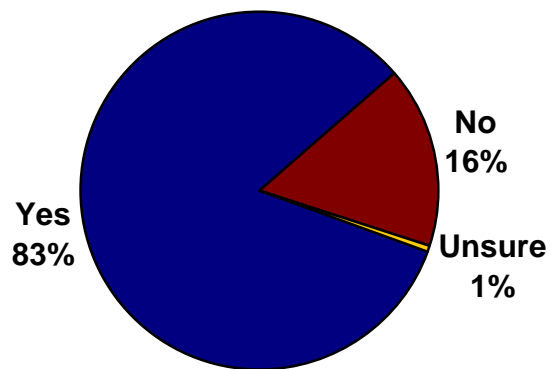
**Figure 7f. Comparison between how long participants have owned property and how they rate the condition of Lac La Biche Lake.**



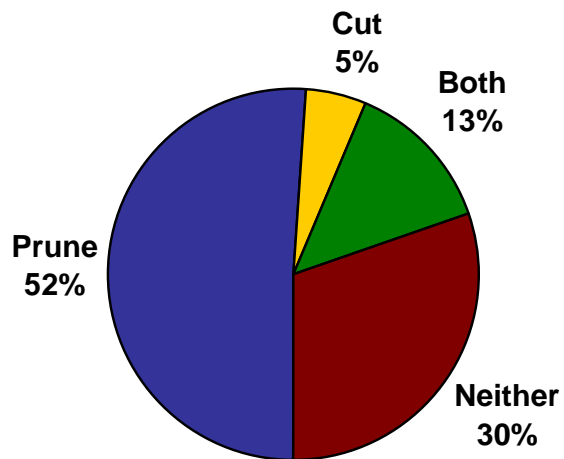
**Figure 7g. How participants from each age group rate the condition of Lac La Biche Lake.**



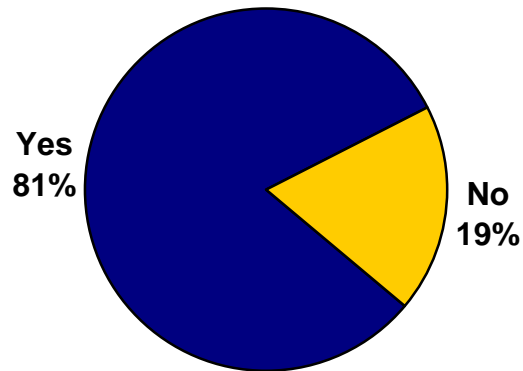
**Figure 13. Percent of participants who feel the quality of Lac La Biche Lake directly affects the recreational use of the lake.**



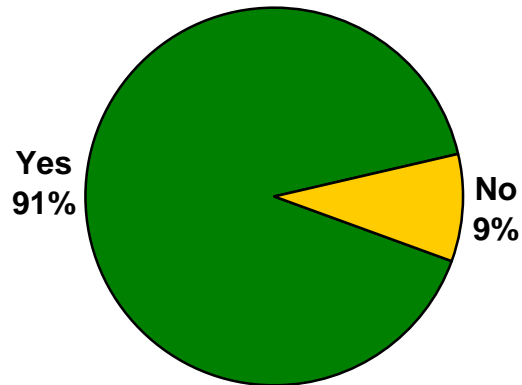
**Figure 14. Percentage of participants who prune or cut trees to get a better view of Lac La Biche Lake.**



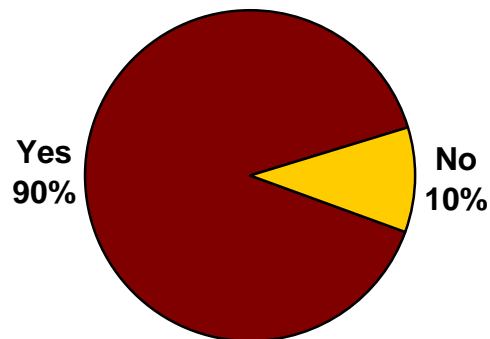
**Figure 15a. Percentage of participants who were aware that there are Environmental Reserves around Lac La Biche Lake.**



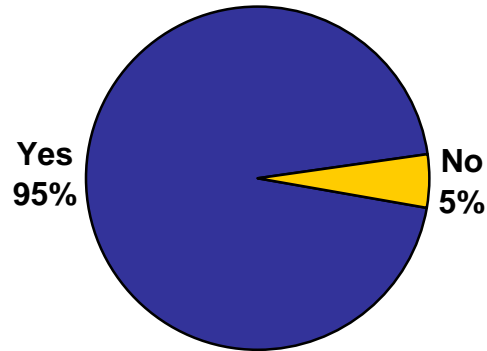
**Figure 15b. Percentage of participants who were aware that the purpose of Environmental Reserves is to protect and preserve a natural feature.**



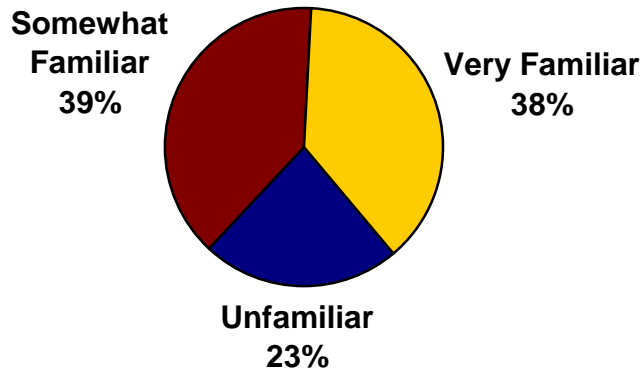
**Figure 15c. Percentage of participants who were aware that the purpose of Environmental Reserves is to protect habitat within the reserve and in any adjacent water bodies.**



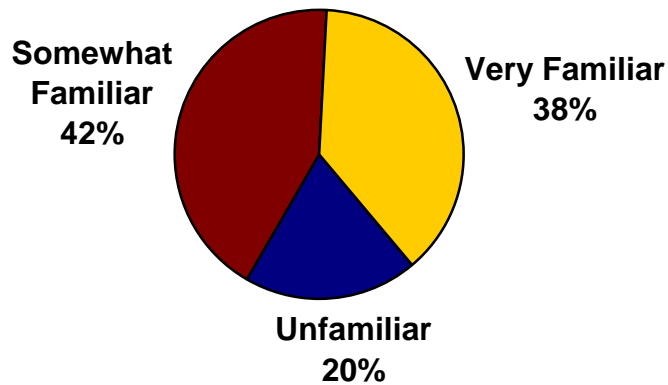
**Figure 16a. Percentage of participants who were aware there are rules and regulations affecting the development of lakeshore areas.**



**Figure 16b. How familiar participants were with building & development setback regulations.**



**Figure 16c. How familiar participants were with private sewage disposal regulations.**



## Appendix 3

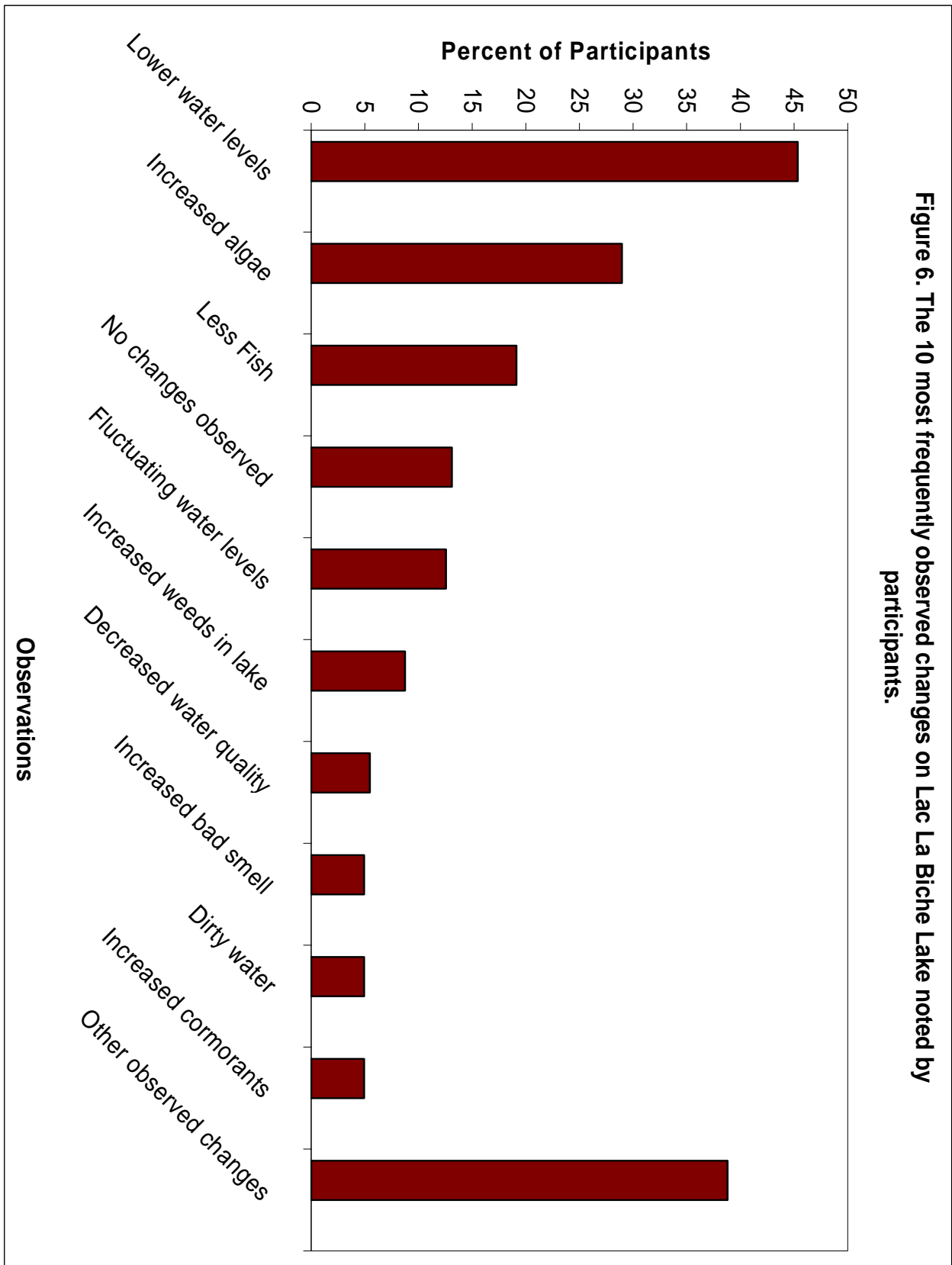


Figure 7b. How participants from **acreage/farms** rate the condition of Lac La Biche Lake.

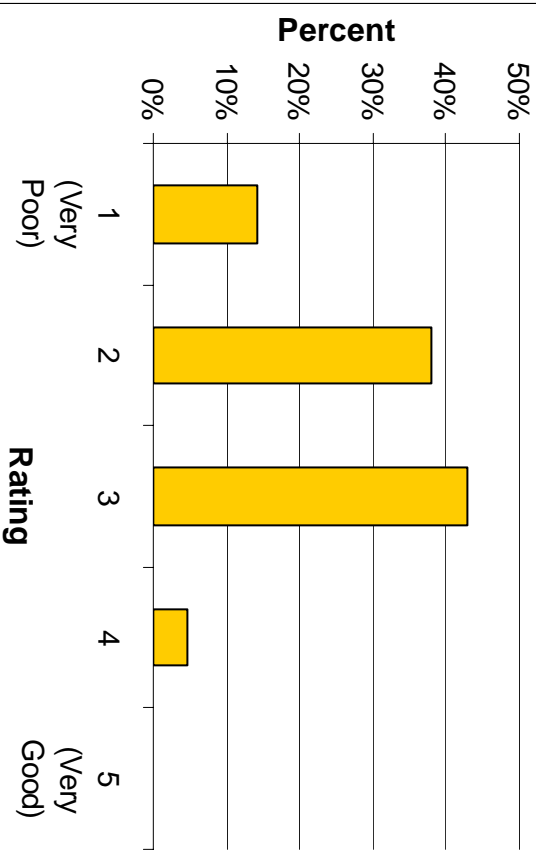


Figure 7c. How participants from **subdivisions** rate the condition of Lac La Biche Lake.

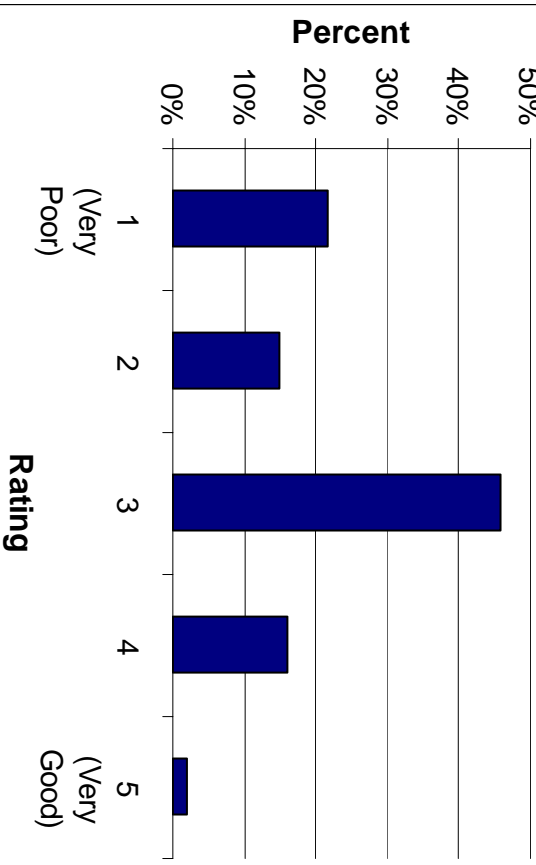


Figure 7d. How participants from the **Town of Lac La Biche** rate the condition of Lac La Biche Lake.

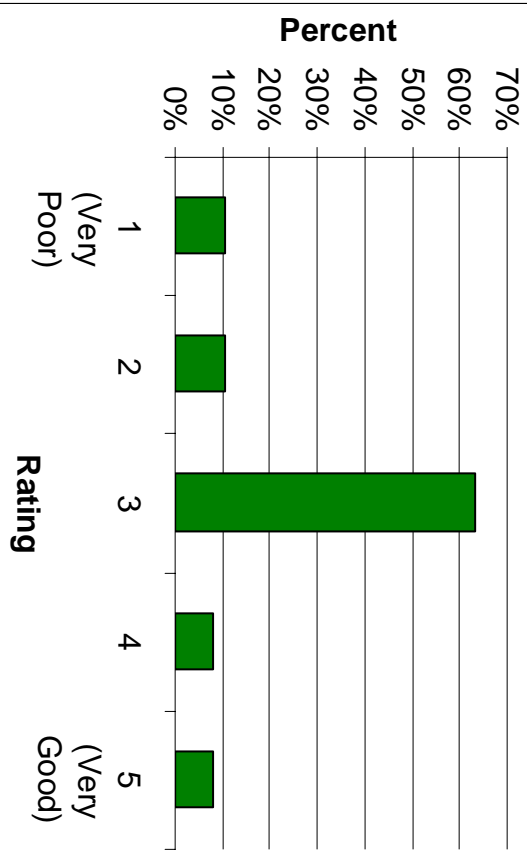
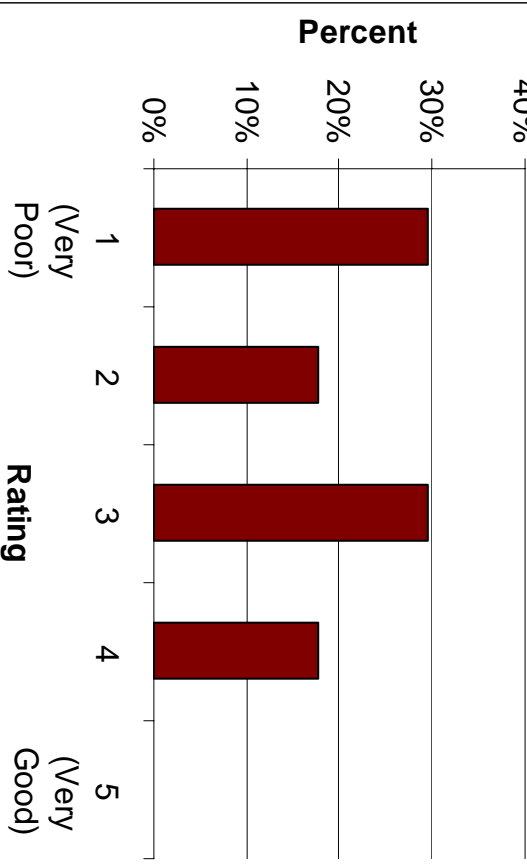


Figure 7e. How participants from the **Hamlet of Plamondon** rate the condition of Lac La Biche Lake.



**Figure 8a. How concerned participants are about the future condition of the Lac La Biche Watershed.**

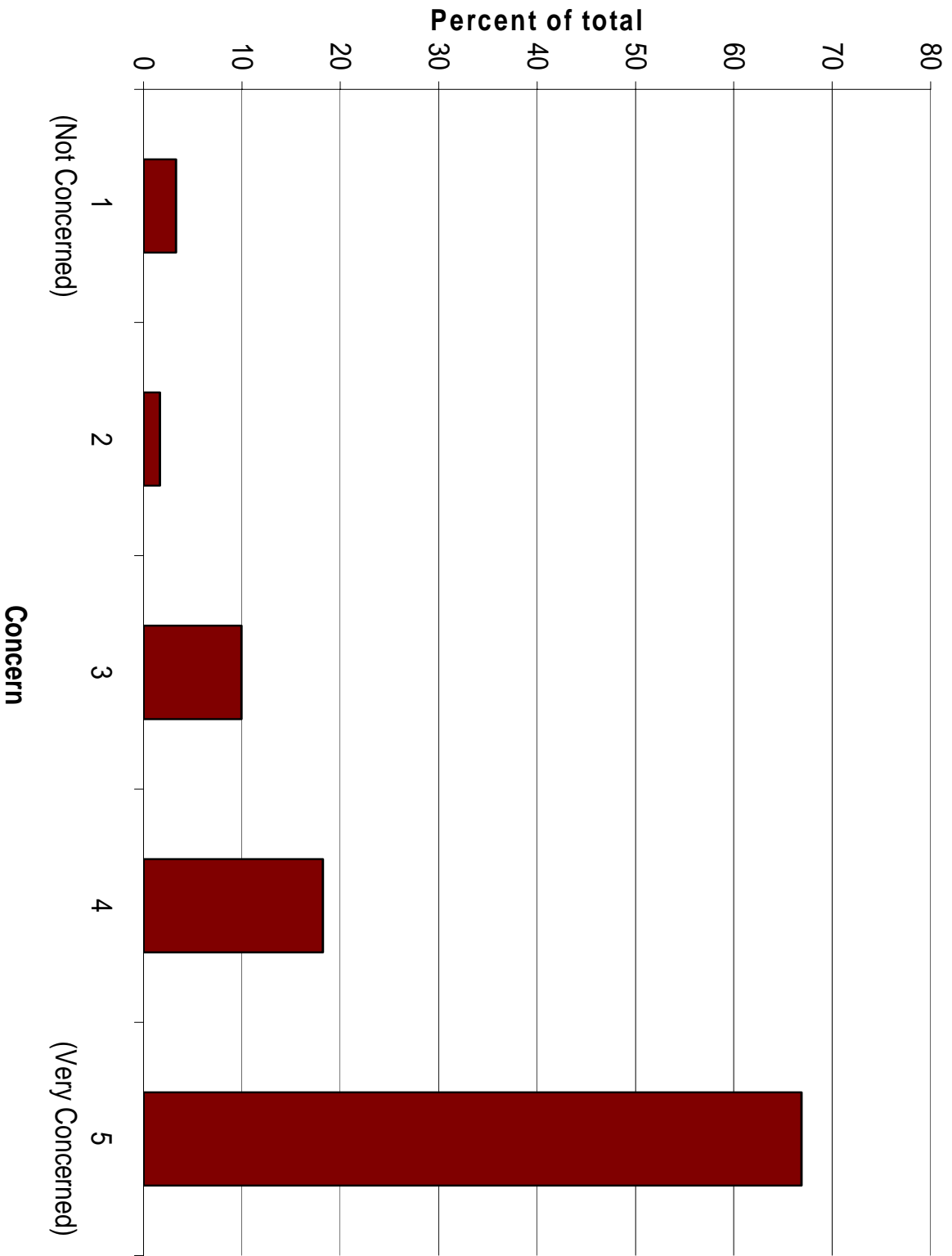
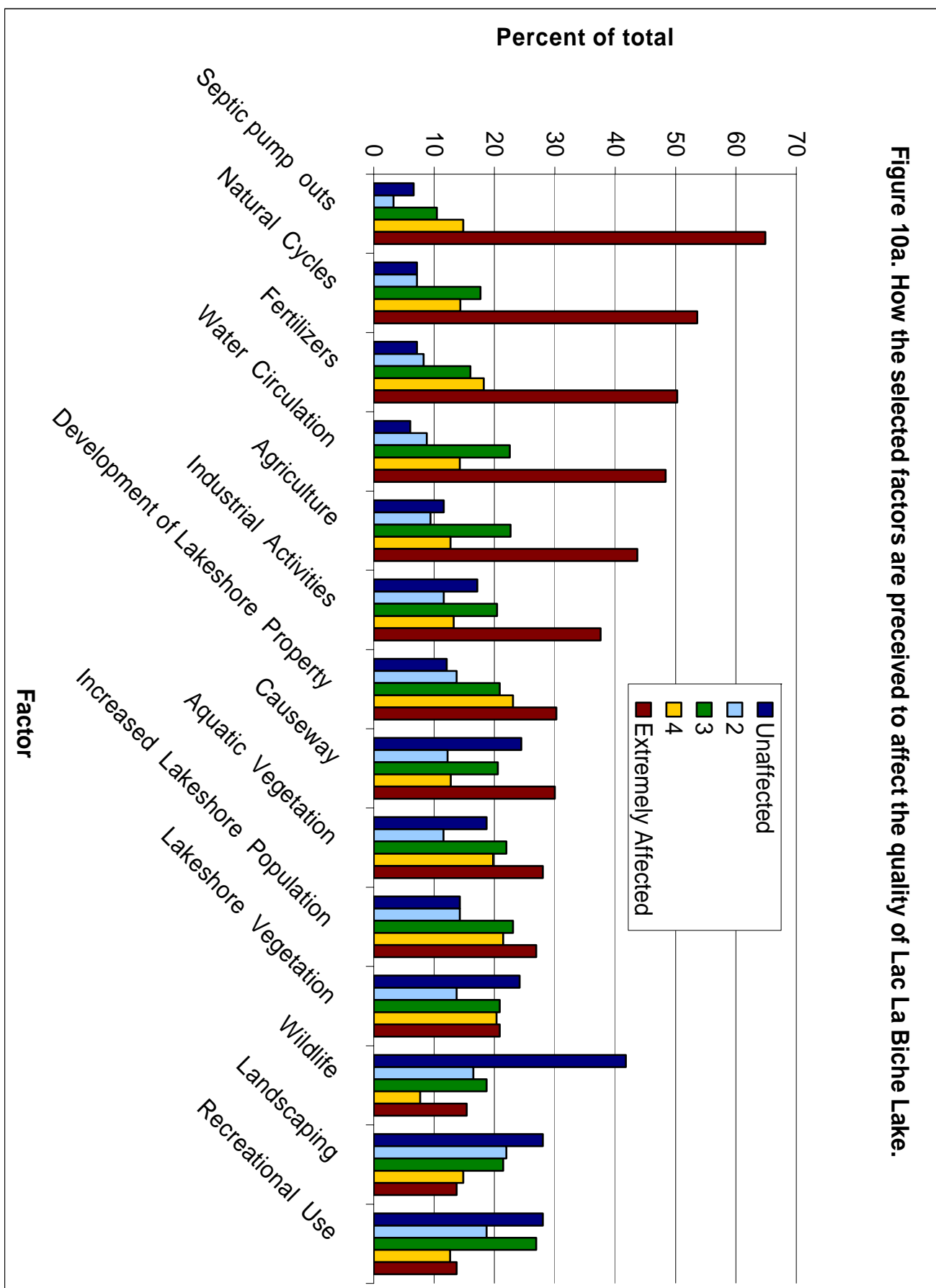
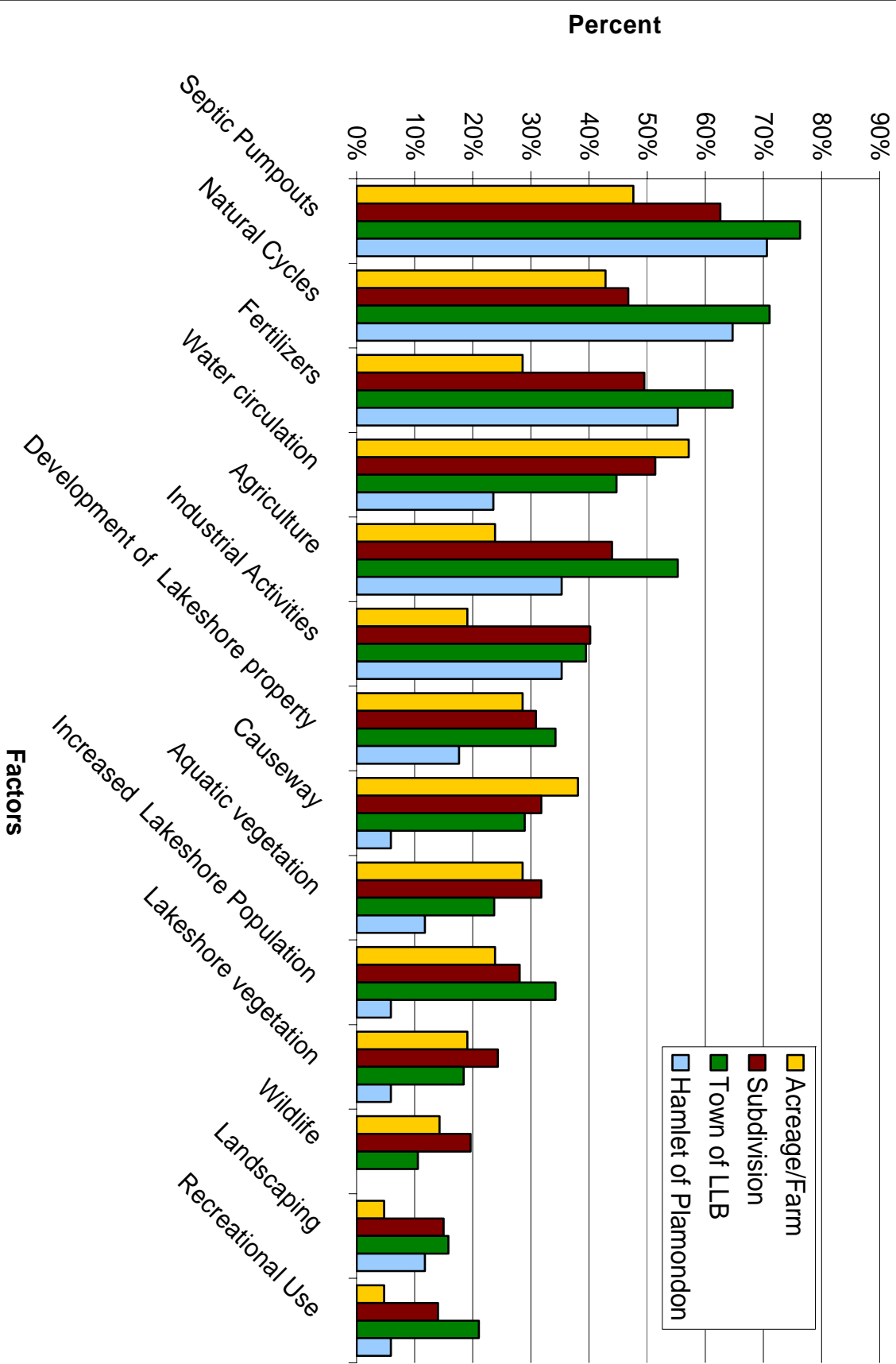


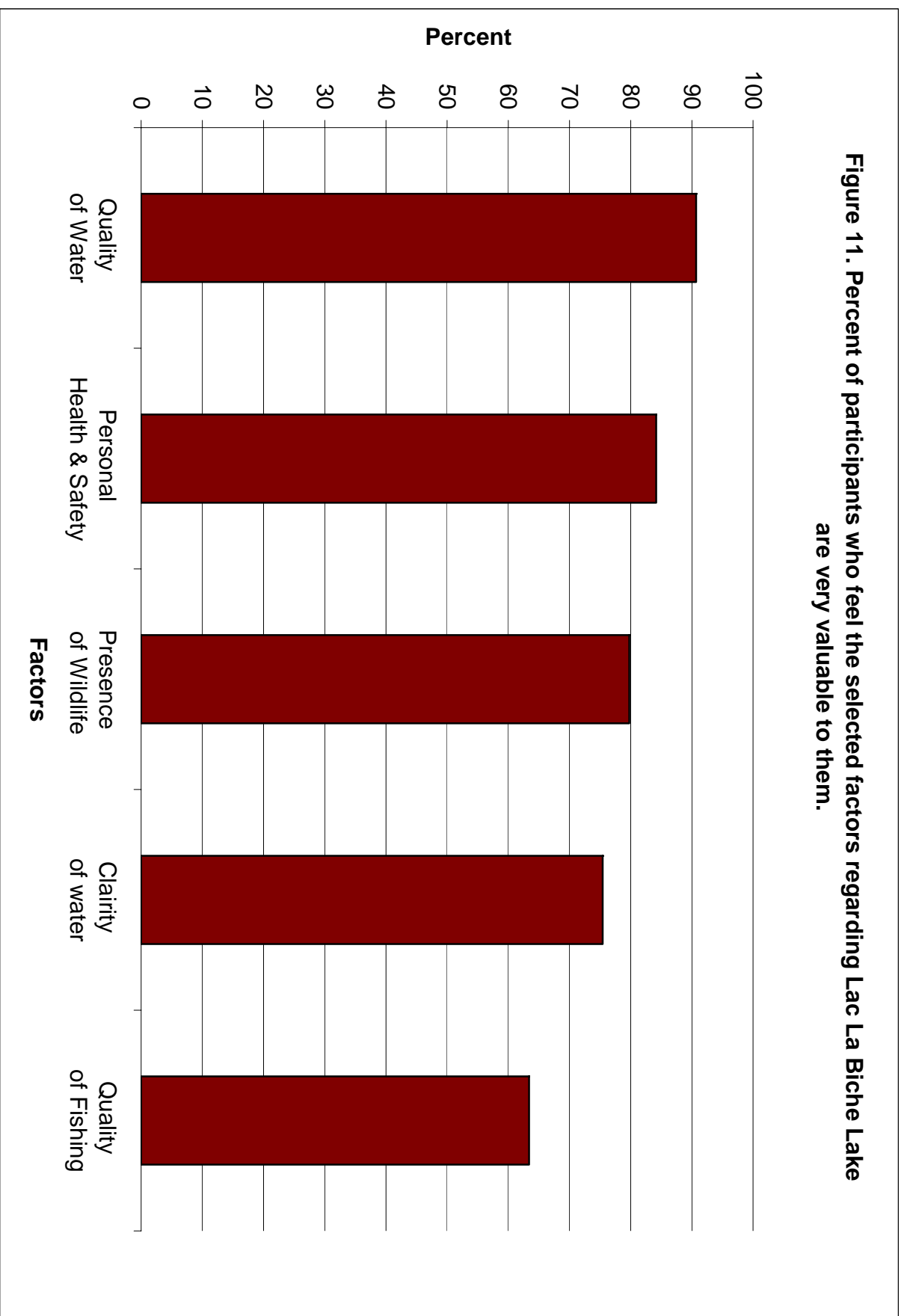
Figure 10a. How the selected factors are perceived to affect the quality of Lac La Biche Lake.

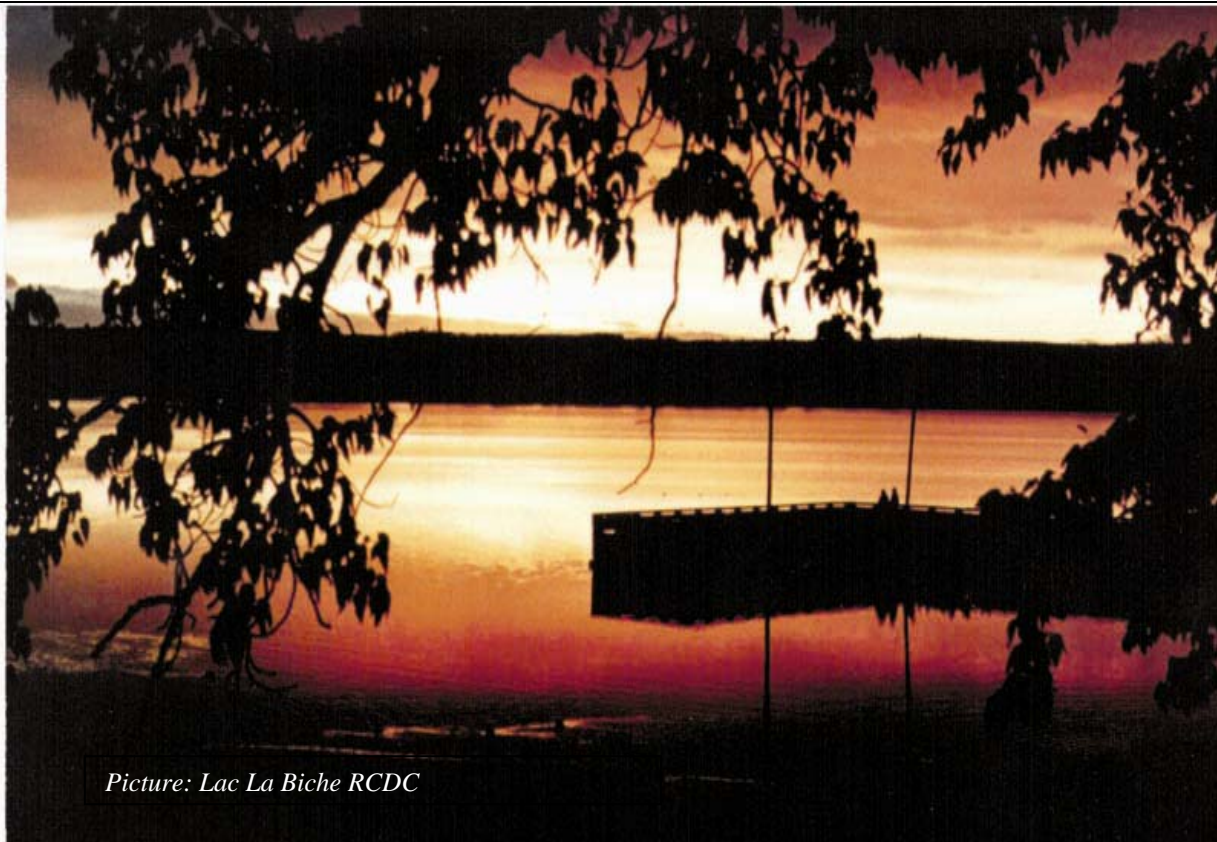


**Figure 10c. Percentage of participants from each location who perceive the selected factors as having an extreme effect on the quality of Lac La Biche Lake.**



**Figure 11. Percent of participants who feel the selected factors regarding Lac La Biche Lake are very valuable to them.**





*Picture: Lac La Biche RCDC*

*If more information is required, please contact the Lakeland County Public Services Department, at the  
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Public Services*

**Candace Cadieux**  
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