THE UNIVERSITY OF CALGARY

Assessing mechanisms for engagement in access management for public lands in southwestern Alberta

By: Rachelle Leanne Haddock

A Master's Degree Project submitted to the Faculty of Environmental Design in partial fulfillment of the requirements for the Degree of Master of Environmental Design (Environmental Science)

Calgary, AB

September 2010

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Abstract

Assessing mechanisms for engagement in access management for public lands in southwestern Alberta

By: Rachelle L. Haddock, under the supervision of Dr. Michael S. Quinn

September 2010

Prepared in partial fulfillment of the requirements for the Degree of Master of Environmental Design (Environmental Science) in the Faculty of Environmental Design, University of Calgary

This Master's Degree Project describes efforts to bridge the gap between existing research and proposed recreation access management for an area of public lands located in southwestern Alberta, Canada. The study area consisted of provincial public lands experiencing increased pressure from both recreational and industrial activities. At the time of writing, there was no comprehensive recreation access management plan for the area. An Internet-based survey was used to examine: how recreation users perceive recreation access management issues, and the acceptability and desirability of different public consultation processes to assist with recreation access management planning. Nine hundred and forty five people responded to the survey. Respondents were categorized into several different groupings for analysis, including: age, membership to an organized recreation use group, motorized/non-motorized recreation users, gender, length of time spent recreating in the area, and residence. Quantitative analysis through factor analysis and multiple analysis of variance indicated significant differences in opinions about what is currently happening on the landscape and the need for access management within all groupings except place of residence ('large city' vs. 'other community'). Non-parametric tests indicated there were no significant differences in desirability of public consultation types between genders; however significant differences in desirability of public consultation types existed between all other groupings. Mechanisms for engagement in access management planning could be designed with the opinions and public consultation preferences of these groups in mind.

KEY WORDS: public lands, recreation, public engagement and consultation

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Dedication

To my parents, Roy and Shirley:

My gratitude and respect cannot be captured within the confines of this page.

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List of Symbols, Abbreviations and Nomenclature

Symbol	Definition
ASRD	Alberta Sustainable Resource Development
ATV	All Terrain Vehicle
CBEM	Community-Based Ecosystem Management
GREM	Grassroots Ecosystem Management
LUF	Land-use Framework
MDP	Master's Degree Project
OECD	Organization for Economic Co-operation and Development
OHV	Off-highway Vehicle
SRB	Survey Response-related Biases
USDA	United States Department of Agriculture

Epigraph

Decisions of ordinary people, every day, result in conservation.

- William Burch

CHAPTER ONE: INTRODUCTION

Research Problem

Public lands in southwestern Alberta are of high importance owing to the many opportunities and benefits they provide to local residents, visitors, communities and industry (Government of Alberta 2005). However, a rapidly growing human population, mounting economic development pressures, intensive land use, the availability of more leisure time, a growing outdoor recreation sector, increased consumer spending, the proximity to large urban centers, and other factors have all contributed to the convergence of significant human activity within public lands in southwestern Alberta. Increasing human use of these public lands has resulted in the need for comprehensive access management planning (Government of Alberta 2005).

This problem is not isolated to Alberta, as similar land use pressures are affecting public lands in British Columbia (Matthews and Quinn 2003) and across North America including National Forests in the United States (Bosworth 2003). Broadly discussing the American West, Nie (2003) stated that the region "is over-appropriated: more people want more things from the same resource base" (p. 314). During his tenure as Chief Operating Officer for the U.S. Forest Service, Francis Pandolfi stated:

> Outdoor recreation is but one of the many multiple uses we have for our lands, public and private. Yet, its importance in Americans' lives and the benefits it provides seem to be increasing faster than many other uses of our precious land. The rise in importance of outdoor recreation in Americans' lives is one of the dramatic changes, as well as challenges, now occurring in the United States (Pandolfi 1999, n.p.).

Increasing pressures on public lands can create social/recreational, ecological and hydrological issues, among others. Past research demonstrates that quality of visitor experiences and visitor satisfaction can be greatly reduced due to resource degradation, crowding and/or other social effects on the natural environment (Cole 1994; Manning 1997). Some recreational users in the region have reported a decline in satisfaction with their recreational experience, and have expressed a desire for better management and enforcement (St. Arnaud 2004). Additionally, the documented increase in recreation use in the region could result in disturbance to wildlife, loss of habitat connectivity at both local and regional scales, habitat fragmentation and habitat loss (Wilcox and Murphy 1985; Cole and Landres 1996; Reed, Johnson-Barnard et al. 1996; Steidl and Powell 2006; Monz, Cole et al. 2010). The effects of recreation on wildlife are relevant as the region provides critical wildlife habitat and a linkage between the protected area complexes of Waterton/Glacier to the south and Kananaskis/Banff to the north (Jalkotzy 2005). The study region is also a critical headwaters area: southern Alberta depends on the ecological integrity of the Eastern Slopes for its water supply (Government of Alberta 2008c).

Recently, the Government of Alberta acknowledged the unprecedented pressure that population growth and economic activity is placing on the province's landscapes by creating the Draft Land-use Framework (LUF) (Government of Alberta 2008c). One of three desired outcomes of the LUF is "liveable communities and recreational opportunities"; to achieve this outcome, the LUF calls for engaging stakeholders in planning processes to improve the quality of land-use decisions and build confidence in the decision making process (Government of Alberta 2008a). The LUF also addresses the need to develop a comprehensive strategy to better manage growing recreational use pressures on public lands (Government of Alberta 2008b).

Effective recreation access management planning requires the development of interdisciplinary approaches that incorporate ecological, social and economic factors. Moreover, the values and attitudes of the recreational users must be clearly understood and incorporated into planning (Matthews 1999). Information, consultation, and active public participation provide government with a better basis for policy-making, while also ensuring more effective implementation, as citizens become well informed about the policies and have taken part in their development (Organization for Economic Co-operation and Development (OECD) 2001b). Public participation encourages local ownership, commitment and accountability, which in turn spurs team-building, joint problem solving and local management capacity (Kapoor 2001).

Contemporary access management is characterized by a dearth of consistency in public involvement (Epp 2003). According to Thornton (2007), studies should be conducted in the foothills of southern Alberta to ascertain the level of interest, quality of stakeholder involvement processes, and preferred methods(s) of participation. Consulting with appropriate stakeholders other than recreation users is critical, as different jurisdictions may have conflicting requirements related to access (Farrand, Finley et al. 2003). However, non-recreational stakeholders were outside the scope of this study.

Project Purpose

The purpose of this research was to examine the views of recreation users on public lands in southwestern Alberta with regard to what is currently happening on the landscape and potential recreation access management on public lands, in addition to their preferences for types of public consultation.

Research Questions

I generated a list of research questions to guide the design of the case study:

1) How do recreation users perceive access management issues?

2) What attitudes do recreation users exhibit/express towards access management?

3) What is the acceptability and desirability of different public consultation processes to assist with access management planning?

Research Methods

A case study research methodology was used to carry out this MDP. The case study research methodology is considered to be the most suitable when the research question asks "how" and "why", as well as when the researcher cannot manipulate events directly, precisely and systematically, and there is a contemporary focus in real-life (Yin 2003).

The research methods included a literature review, exploratory focus groups, and an online survey. For a detailed description of the research methods, please see chapter two. A statistics package (SPSS 17.0) was used carry out quantitative analysis of the survey data. A detailed description of selected results is included in chapter four, and a discussion of those results is included in chapter five.

Definitions

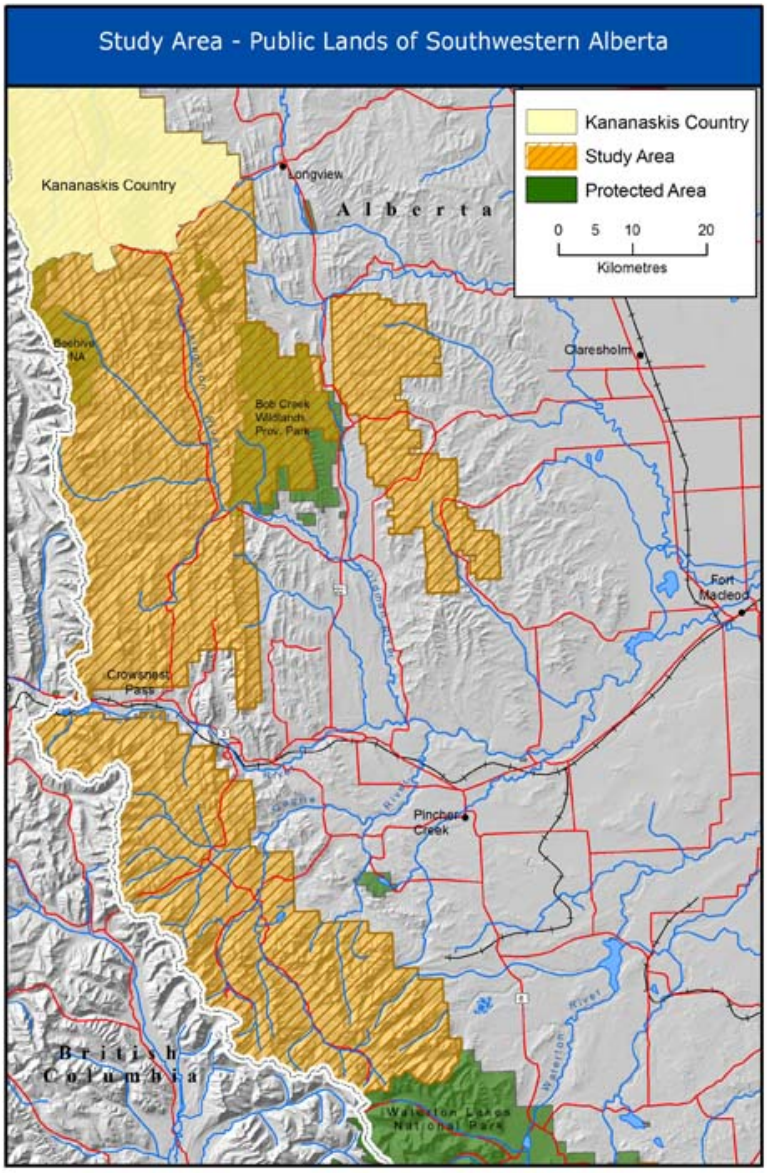
Case study is a strategy for doing research involving an empirical investigation of a contemporary phenomenon within its real life context using multiple sources of evidence (Robson 1993).

This research study focused on recreation access management planning for public lands in southwestern Alberta. For the purposes of this MDP, recreation access management was defined as determining what types of activities can occur on a landscape, and where and when those activities can take place. For the remainder of this MDP, recreation access management will be referred to simply as access management. Public lands in southwestern Alberta were defined as public lands including the Porcupine Hills west to the British Columbia border, and from the southern border of Kananaskis Country to the northern border of Waterton Lakes National Park (Figure 1).

The U.S. Forest Service defined an off-highway vehicle (OHV) as any motor vehicle designed for, or capable of, cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland or other natural terrain (USDA Forest Service 2005). For the purposes of this study, an OHV was defined as any three- or four-wheel all-terrain vehicle, off-road motorcycle or snowmobile used for recreational purposes.

For the purposes of this study, public consultation was defined as a way to provide input or feedback, and to gain recognition of that feedback. Examples of types of public consultation include: online surveys, random sample phone surveys, open houses and public meetings. This research project explored types of public consultation that may be utilized by the Government of Alberta or its contractors. Activities such as civil disobedience fall outside the scope of this study.

Figure 1: Map of study area



Source: Miistakis Institute

Limitations of Study

There are inherent limitations to survey research (Rea and Parker 1997). There is the possibility of researcher bias in the way that questions are selected, written and asked; respondent bias in the way that respondents interpret and answer questions; and researcher bias in the way that responses are analysed. To address these limitations, I based the questions on input from several focus groups and other similar survey projects. To minimize respondent misinterpretation, the questions were framed in plain language and I had several people external to the project review the questions for clarity. To minimize researcher bias in the way responses were analyzed, I sought out the assistance of a number of statisticians who were independent to this project.

One of the limitations of the study is that a comprehensive list of all recreation users of public lands in southwestern Alberta did not exist. Instead, purposive sampling through the snowball technique was used to administer the survey. As a result, a random sample of users was not generated. Additionally, many recreation users may not have been aware of the study and did not complete a survey.

Another limitation of this research was that recreation users who do not own a computer and/or have access to the internet were limited in their ability to learn about and complete a survey. Although some of these recreation users may have been able to access a computer at a library or through other means, this may have been a barrier for some potential respondents.

The timing of the online survey may have posed a challenge to some potential respondents. The survey opened on October 6, 2008 and closed on December 20, 2008. This time period may

have posed a barrier to potential respondents with busy schedules at this time of year, such as hunters.

Another fundamental challenge in recreation user surveys is the absence of nonusers or disenchanted users (Legare and Haider 2008). The issues of self-selection bias or survey response-related biases (SRB) are discussed by Messonnier, Bergstrom, Cornwell, Teasley, and Cordell (2000). According to these authors, if all members of the sample to whom questionnaires are distributed (i.e., the surveyed sample) respond with fully complete questionnaires, there is no possibility of SRB. However, it is unlikely that all recipients will respond, so that the realized sample (i.e., the final data set available to the researcher) will differ from the surveyed sample. As a result, the sample available for estimation may not be representative of the target population, a clearly undesirable circumstance (p. 439). I did not take any specific action to counter SRB, although I acknowledge that it may have affected my findings.

Scope

The scope of the research did not include public lands managers, commercial lease holders, grazing lease holders, First Nations, and other stakeholders although they may have shared their views as a recreation user. However, there was no way to determine which respondents have another stakeholder role in the study region outside of being a recreation user.

CHAPTER TWO: METHODS

I used an exploratory case study approach to describe how recreation users wish to be involved in recreation access management planning for public lands in southwestern Alberta. I defined my case as public consultation for access management planning for public lands in southwestern Alberta. I selected this case because there are a growing number of people recreating on public lands in southwestern Alberta and because an access management plan does not exist for most of this region. I used a single case with one unit of analysis- recreation users of public lands in southwestern Alberta.

The purpose of the case study was to examine how recreation users wish to be involved in access management planning. Recreation access management issues, the values and attitudes of users towards those issues; and the acceptability and desirability of different public consultation processes to assist with access management planning were examined and evaluated through the research. The criterion for a successful case study (Yin 2003) was the development of specific recommendations for public engagement and consultation approaches with regard to access management planning for public lands in southwestern Alberta.

Sampling Strategy

This research was conducted between September 2007 and September 2010. I received approval from the University of Calgary's Conjoint Faculties Research Ethics Board on April 17, 2008 (Appendix A). I received multiple extensions on my ethics approval, with the last extension being granted until December 30, 2010. The protocol for managing the collected data upon

completion of the research project is outlined within my application to the Conjoint Faculties Research Ethics Board (CFREB) under File No: 5631.

Researcher Notes

I became familiar with this area of public land through two summers of work as a field research assistant for a study located in the Livingstone Range of southwestern Alberta. In 2003, the Miistakis Institute initiated a multi- year research project called the Livingstone Study to examine the relationship between human recreation use and wildlife through the use of remote cameras (The Miistakis Institute 2006). Through my field research experience in the summer months of 2006 and 2007, I witnessed the diversity and number of recreation users on the landscape. I also spoke with many recreation users about where they came from, their experiences recreating in the area, and how they viewed access management issues.

From the time that I began developing this case study, I met sporadically with representatives from Alberta Sustainable Resource Development. My intent in meeting was to seek input on my research design from their staff, and to keep them apprised of my research plans. I also notified the office of the Evan Berger, Member of Legislative Assembly for Livingstone-Macleod, about my research plans.

Methods and Instruments for Data Collection

The methods and data collection instruments for my study were as follows:

a) Critical analysis of the literature on public consultation, with a focus on access management for public lands relevant to the study area, in order to develop a conceptual framework for public consultation and access management planning on public lands in southwestern Alberta;
b) Focus groups with recreation users to solicit input regarding: recreation access management issues; the values and attitudes of users towards those issues; and the acceptability and desirability of different public engagement and consultation processes to assist with access management planning for public lands in southwestern Alberta;
c) Based upon the results of the focus groups, an online survey was developed to solicit input from a larger number of recreation users regarding: recreation access management issues; the values and attitudes of users towards those issues; and the acceptability and desirability of different public engagement and consultation processes to assist with access management planning for public lands in southwestern Alberta; and
e) Analysis of the online survey through the use of statistical software and basic content analysis.

Conceptual Framework

I developed a conceptual framework as part of my case study approach. My conceptual framework is included in chapter three.

Focus Groups

Focus groups provide valuable insights in a short period of time and are cost effective. When focus group members are carefully selected, powerful insights from individuals who are closest to the issues with vested interests are revealed (Flood 2003). According to Vaske (2008), focus groups are one technique that allow researchers to obtain a feel for the type and range of issues

that are related to project objectives and important to the population of interest. Further, focus groups stimulate thinking and elicit ideas on a particular subject. Information gained from focus groups can be used to develop questions that will be included in a questionnaire to be administered later to a larger sample of individuals (Vaske 2008).

Given that I could not obtain a complete list of recreation users in my study area, I could not randomly select focus group participants. Instead, I used several different strategies to recruit participants for the focus groups. These strategies are described below.

There is no formal analysis of the focus groups contained within this MDP. The results of the focus groups were used to craft the language of the online survey questions and responses. However, I do make reference to some of my observations from the focus groups during the discussion of my online survey results where I highlight a few similarities and differences between what I observed at the focus groups and the outcomes of the online survey.

Photo Exhibit

I organized a photo exhibit at the Crowsnest Pass Public Art Gallery entitled "presence-absence: an exhibit of Livingstone Study Images". The exhibit was held from April 26 – May 19, 2008. In addition to showcasing a selection of the Miistakis Institute's Livingstone Study images, I used the exhibit as a way to promote my MDP and to recruit participants for both my focus groups and online survey.

The Public Art Gallery sent out invitations to its mailing list for an opening reception on April 26, 2008. Additionally, the Crowsnest Conservation Society and the Crowsnest Pass Chamber of Commerce hosted an information evening and reception on April 30, 2008. The Crowsnest

Conservation Society promoted the event through their newsletter. I was present at both receptions to provide a brief talk on my research project and be available for questions. Two local newspapers- the Crowsnest Pass Herald and the Crowsnest Pass Promoter- ran articles promoting the exhibit.

I provided an information sheet about my research and a participant sign-up list to remain on display for the duration of the exhibit. Twenty individuals provided their contact details through the sign-up sheet.

Community Organizations

I sent out focus group recruitment requests via email to relevant public interest groups in the region, including: Castle Crown Wilderness Coalition, Crowsnest Conservation Society, Crowsnest Forest Stewardship Society, Crowsnest Pass Quad Squad, Friends of the Livingstone, Road Watch in the Pass and Southwest Alberta Sustainable Communities Initiative. I asked each organization to share my focus group recruitment notice with their membership. I also sent a recruitment notice to the Evan Berger (Member of the Legislative Assembly for Livingstone-Fort McLeod), any contacts that I had obtained from my field work seasons, and any contacts from the photo exhibit at the Public Art Gallery. Please see Appendix B for all recruitment materials for this project.

Ed Gregor Day

The Crowsnest Forest Stewardship Society had a participant sign-up sheet for my research at Ed Gregor Day- an annual volunteer cleanup effort on public lands around Crowsnest Pass. Two to

three hundred people participated in this annual event. The Society also had 100 focus group recruitment postcards for distribution at the event.

Changes in Case Study Design

Case study design is a continuing process during the study (Robson 1993). I made two changes in my design during the case study's early stages: the extent of my study area and the number of motorized user focus groups.

Initially, my study area included only the Livingstone Range which is bordered by the height of land on either side of the Livingstone River, Highway 532 on the north, and Highway 517 on the south. However, when I attempted to recruit focus group participants I was not able to find sufficient numbers of people who recreated in that area. A leader of a local stewardship group informed me that I likely wouldn't be able to gain a large number of participants because most of their membership recreated south of the proposed study area. As a result, I expanded my study area's boundaries as follows: from the southern border of Kananaskis Country to the northern border of Waterton Lakes National Park, and from the British Columbia/Alberta border to the eastern border of the Porcupine Hills.

I split the focus groups into motorized and non-motorized users. By doing so, I hoped to circumvent any potential conflicts between the two groups. According to Flood (2003), homogeneity among group members is critical, as focus groups are intended to offer opportunities for participants with similar interests and/or perspectives to share their perceptions. Initially, I had planned to run two focus groups with motorized users and one with non-motorized users. I chose to organize the focus groups this way to reflect the number of

motorized and non-motorized users on the landscape. I was not able to access detailed records on the number and type of users in the study area. A survey of users of the Crowsnest Forest- which is encompassed by the study area- found that just over half of the respondents accessed the Crowsnest Forest for motorized use (Alberta Sustainable Resource Development 2005), while the Livingstone Study reported that motorized use represents greater than 87% of the human use recorded on recreation trails within part of the study area – the Livingstone Range (The Miistakis Institute 2006).

I encountered difficulties in recruiting enough motorized users for two focus groups. I had anticipated that members of the Crowsnest Pass Quad Squad- or Quad Squad- would make up most of the motorized focus group participants. I contacted the organization's Vice-President regarding my research project and asked if the Quad Squad would be willing to help me recruit participants for the focus groups. However, the organization made a decision at a meeting in the spring of 2008 to not become involved with my research project. As a result, I held two non-motorized user focus groups and one with motorized users.

I held three focus groups in the Crowsnest Pass on June 17, 19 and 25, 2008. The timing of the focus groups coincided with the final weeks of school and the beginning of the summer recreation season. I facilitated each focus group and was assisted by a note taker. Each focus group was audio recorded. The focus groups were two hours in duration, and the discussion centered on a focus group guide (Appendix C). There were: six participants at the June 17 focus group, nine participants at the June 19 focus group, and nine participants at the June 25 focus group.

Online Survey

I used the results of the focus groups to create an online survey. Research strongly indicates that the use of focus groups, in combination with surveys and interviews, is a useful tool in the effort to improve management of recreation areas (Flood 2003). Questionnaires are particularly suitable tools for approaching certain topics in ecology, including studies of public or stakeholder perceptions in ecological management, as quantifying public perceptions is becoming a key component in translating ecology into management (White, Jennings et al. 2005).

I used online survey software (www.surveymonkey.com) to host the survey. Prior to opening the survey for responses, I received feedback on the online survey from my supervisor, my external committee member, staff at the Praxis Group and the Miistakis Institute. I also had several colleagues test the survey for grammar and spelling, clarity of questions and ease of use. Please see Appendix D to view a copy of the final survey.

Again, a comprehensive list of all recreation users of public lands in southwestern Alberta does not exist. As a result, I could not create a random sample. Instead, I used purposive sampling through the snowball technique to generate my sample.

Survey Respondent Recruitment

I worked with James Sloan from the University of Calgary's External Relations Department to promote the survey. James sent out a release (Appendix B) to 79 media contacts in southwestern Alberta on November 14, 2008. CBC Radio One News, Crowsnest Pass Promoter, Nanton

News, Prairie Post West and The Regional ran stories about the research project and the opportunity for recreation users to fill out an online survey.

Additionally, I sent out an online survey recruitment email to all focus group participants (24 people in total) and to any other individuals who had expressed interest in the research project (22 people in total). I asked all of these contacts to please forward the online survey recruitment email to all of their contacts who may be interested in filling out a survey.

I informed Alberta Sustainable Resource Development (ASRD) about the survey, but they were not willing to assist with survey promotion. Instead, ASRD staff referred me to several provincial motorized user groups. They also encouraged me to post my survey on motorized user groups' online discussion boards/forums. I contacted 58 different motorized user group organizations via email to ask if they would share my online survey recruitment notice with their membership directly, through their websites or their online forums.

The survey went live on October 6, 2008 and closed on December 20, 2008. Nine hundred and forty five respondents filled out a survey. Survey Monkey assigned each respondent a record number, but there were no identifying details attached to each record.

Analysis

Analysis of Open-ended Survey Responses

Qualitative analysis of the data involved reading through all open-ended questions, generating major themes for responses, and coding the responses into the major themes sharing a common focus. I limited the number of codes to 12 for each code family in order to process the data

efficiently. When the code families were prepared for each question, I read over all responses to each open-ended question a second time and assigned a maximum of five codes to each response. I created an Excel spreadsheet for each open-ended question and recorded the number of times that each code was mentioned for each respondent who provided a response. However, with the exception of the question on how respondents wish to receive feedback following public consultation, I did not report on any of the open-ended analysis within this document.

Analysis of Close-ended Survey Responses

I used SPSS Statistics 17.0 to carry out analysis on the close-ended questions. I also used Minitab version 15 to generate random numbers for analysis purposes. A confidence level ($p<0.05$ or 95%) was used for the analysis (Rea and Parker 1997).

Variables

Participants were asked for personal information to provide the data necessary for detailed response analysis by variable. The variables chosen for exploration include: age, member of an organized recreation user group(s)/non-member of an organized recreation user group (membership/non-membership), motorized users/non-motorized users (motorized/non-motorized), gender, tenure recreating in the study area (i.e., the number of years a respondent has recreated in the study area), and place of residence (large city/other). Respondents were asked to provide their postal codes, and were subsequently grouped into "large city" or "other" residents. If a respondent's postal code was housed within Calgary or Edmonton, the respondent was assigned as a large city resident. Respondents with all other postal codes including smaller cities, towns and rural areas were classified as "other" residents.

Two further variables were generated based upon responses to two questions in section one of the survey: 5a (Since you began recreating on public lands in southwestern Alberta, how would you rate the quality of your experience?) and 7c (Please rate how the effects from recreation activities that you observed on public lands influenced your recreation experience.). These variables were called 'change in recreation quality' and 'effects/influence' respectively.

Factor Analysis and Multiple Analysis of Variance

Factor analysis can concurrently manage large sets of variables with unknown interdependencies by using correlations to group sets of variables (Rummel 1970). For my purposes, factor analysis was used to reduce access management statements into smaller sets of underlying factors. An exploratory factor analysis was performed using principal components analysis (PCA) with Varimax rotation and Kaiser Normalization. This helped to detect the presence of meaningful patterns among the original variables and to extract the main factors. In the interpretation of the factors, statements having factor loadings of 0.6 or higher were considered in determining the latent construct represented by each factor (Hair, Anderson et al. 1998).

The factors were interpreted and subsequently used to carry out multiple analysis of variance (MANOVA) tests on the access management statements. MANOVA was used to compare groups formed by categorical independent variables against the two dependent variables or components created through the exploratory factor analysis. The categorical independent variables included: age, membership to an organized recreation use group (membership), motorized recreation use (motorized), place of residence (residence), gender, tenure, change in quality of recreation, and observation of effects/influence on recreation experience. Within each variable, demographic groupings commonly used in Canadian survey research were applied. I

made a decision to create the groups for the residence variable for ease of coding the data. I did not use cluster analysis to create groups for the variables, although it could have been used as an alternate approach to create both the age and tenure groups for analysis.

Given that I did not have a random sample, I checked for normality and equality of variance before running MANOVAs, as normality and homoscedasticity are requirements for this test. When normal distributions were not present, I attempted recoding the independent variable, but the result was unsuccessful. Consequently, I removed outliers for skewness and kurtosis to achieve a normal distribution which is necessary to run MANOVA tests. On average, I removed five outliers per independent variable and factor comparison, although I could have removed more cases for each categorical variable and factor comparison because the data file was quite large. I acknowledge that outliers can provide valuable information about divergent cases; however the intent of the factor analysis was to engage in data reduction. To address potential concerns regarding a loss of the divergent cases, I kept detailed records on which cases were removed.

Owing to a large data set and balanced design, I ignored significant results for Box's M (overall) or Levene's test of homogeneity of variances (univariate). If the samples are of equal size, then the effect of the violation of the homogeneity assumption is not serious (Hinkle, Wiersma et al. 2003).

When MANOVA resulted in significant differences, Tukey Honestly Significant Differences (HSD) multiple comparisons were used to test for all pair-wise differences involving categorical variables with more than two groupings, with the exception of the observation of effects/influence on quality of recreation experience variable. The effects/influence variable was

not suitable for parametric tests as discussed below, so I used an inequality to test the significance of individual pairs of differences for this variable.

Three variables were initially problematic for MANOVA comparisons including tenure[1], change in recreation quality and effects/influence. I used recoding for the tenure variable, removal of cases for the 'change in recreation quality' variable and nonparametric tests for the 'effects/influence' variable in order to carry out analysis. I describe these strategies in detail below.

Recoding - Tenure

To make the distribution normal for the tenure variable, it was necessary to recode group one 'less than one year' (n=20), group two 'one to two years' (n=48) and group three 'three to five years' (n=98) into a new group three (less than one year to five years, n=166). I also recoded group four 'six to 10 years' (n=121) and group five '11-20 years' (n=160) into a new group five (six to twenty years, n=281). Next, I removed outliers for skewness and kurtosis as I did for the other variables when necessary in order to achieve a normal distribution.

Removal of Cases - Change in Recreation Quality

Since the assumptions for MANOVA were not initially met for this variable, I tried to balance the group samples in order to ignore the violation of homoscedasticity. There were initially 420 cases in group three 'decreased/diminished' resulting in a design that was not balanced. To create a balanced design, I used random selection in SPSS to remove 201 cases for category

[1] Tenure categories included: less than one year, one to two years, three to five years, six to 10 years, 11-20 years and over 21 years.

three ‘decreased/diminished’ to bring the number of cases down to 219. Then, I used Minitab version 15 to create random numbers to remove 30 random cases from group two ‘same/unchanged’, resulting in an n of 220 cases for group two. Box's Test of Equality of Variance indicated statistical significance, but the groups had more than 100 cases each, and the design and group numbers were balanced, so I proceeded with MANOVA comparisons for this variable.

Nonparametric Tests - Effects/Influence

I was able to normalize the data for this variable, but in order to do so I had to remove the lowest group (1- did not impact) and only compare groups three (detracted somewhat) and four (detracted greatly). Upon the removal of the lowest group, I had a significant Box’s test result as the two groups are very different. I then used non-parametric Kruskal-Wallis tests of difference for the analysis. To carry out post hoc comparisons on this variable, I used the following inequality to test the significance of individual pairs of differences (Siegel and Castellan 1988):

$$|\bar{R}_u - \bar{R}_v| \geq z_{\alpha/k(k-1)} \sqrt{\frac{N(N+1)}{12}\left(\frac{1}{n_u} + \frac{1}{n_v}\right)}$$

Bivariate Comparisons

Analysis of the public consultation questions involved bivariate comparisons between questions regarding past public consultation experience, the specifics of past public consultation experience, preferences for types of public consultation, preferences for notification about public consultation and preferences for feedback following public consultation against several

variables. These variables included: age, membership to an organized recreation use group, motorized use, gender, place of residence (large city vs. other), tenure, change in quality of recreation, and observation of effects/influence on recreation quality.

Chi-square (crosstabs) comparisons with a significance level of p=0.05 were used for both past public consultation experience (whether they had previously participated in public consultation or not) and past public consultation experience specifics (i.e., type of public consultation respondents have experienced). Respondents were asked if they had: attended an open house; attended a public meeting; wrote a letter expressing their opinion; responded to a paper survey; responded to an online survey; responded to a random phone survey; sat on an advisory committee; or participated in another type of public land-use consultation. The responses to whether respondents had participated in "another type of public land-use consultation" were disregarded for the purposes of this MDP as they required content analysis of the open ended response attached to that question.

Preferences for types of public consultation were analyzed through Mann-Whitney U comparisons (for variables with only two groups, such as gender) and Kruskal-Wallis comparisons (for variables with three or more groups, such as age) with a significance level of p=0.05 for both tests. When Kruskal-Wallis comparisons detected a significant difference, Mann-Whitney U comparisons (with Bonferroni correction) served as a post hoc test.

Preferences for notification about public consultation were analyzed through chi-square (crosstabs) with a significance level of p=0.05. Preferences for feedback following public consultation were also analyzed through chi-square (crosstabs) with a significance level of p=0.05. Preferences for feedback following public consultation were provided through an open-

ended question within the survey. A total of 817 respondents provided an answer to this question. Prior to chi-square analysis, responses were reviewed twice and then a list of nine categories was generated based upon the responses received: feedback by email (n=400), specific (i.e., detailed) feedback (n=78), feedback by mail (n=114), feedback by internet (n=95), feedback by media (n=55), feedback in person (through a one-on-one or public meeting) (n=40), feedback by telephone (n=31), feedback by club communication (n=22), and no feedback (n=6).

Preferences for notification and feedback were not explored for groups who have experienced a change in their quality of recreation or those who have observed effects that have influenced their quality of recreation experience.

CHAPTER THREE: THEORETICAL FRAMEWORK

Introduction

For the purposes of this Masters Degree Project, I carried a single case study with one unit of analysis- recreation users of public lands in southwestern Alberta. Case study research design benefits from the development of a theoretical framework (Yin 2003). A theoretical framework addresses the main features of a case study and their presumed relationships (Robson 1993). In addition to guiding the definition of appropriate research design and data collection, the use of theory also becomes the main vehicle for generalizing the results of a case study (Yin 2003).

Within this chapter, I provide a brief summary of the environmental and social effects caused by recreation. I then describe recreation access management planning and the role it plays in addressing these effects. Subsequently, I provide justification for defining recreation access management planning as a 'wicked problem'. Next, I discuss the role of public participation in access management planning with a focus on both what works well and what does not work well. Finally, I discuss potential future directions, or paradigm shifts, for access management planning and public participation.

According to Farrand, Finley and others (2003) linear developments, including pipelines, roads and power lines, have the potential to create or improve pathways for people to gain access into remote areas for activities such as hunting, fishing, camping or recreational vehicle use. However, increased access brings with it consequences to both private landowners in the immediate vicinity and the environment.

Environmental Dimensions of Recreation Use

Cole and Landres (1996) identified recreational use and its management as one of several significant threats to wilderness ecosystems. Unmanaged outdoor recreation is one of the "Four Threats" to forest health identified by Former US Forest Service Chief Dale Bosworth (2003) . In their comprehensive review of the potential effects of linear disturbances on terrestrial and aquatic habitats, Trombulak & Frissell (2000) identified seven primary concerns: increased mortality from road construction, increased mortality from collisions with vehicles, modifications of animal behaviour, alteration of the physical environment, alteration of the chemical environment, spread of exotic species, and increased alteration and use of habitats by humans. Additionally, people using linear corridors as pathways to access remote areas have the potential to adversely affect the environment through destruction or alteration of vegetation, change in aesthetics, soil erosion and compaction, sedimentation of watercourses, disturbance of environmentally sensitive areas, and contribution to cumulative effects (Farrand, Finley et al. 2003).

Water is impacted by land-based recreation activities, including fishing, hiking and off-road vehicle travel. According to Knight and Gutzwiller (1995), these effects can include alteration of flow regimes, elimination of protective cover afforded by overhanging banks, increased sedimentation and turbidity, introduction of pollutants (e.g., gasoline and oil leaked by OHVs) and disturbance of streambeds and lake bottoms. Traditionally, designated OHV use areas in Alberta have few, if any, restrictions on OHV users that have been designed to protect fish and fish habitat from the effects of stream fordings by OHV users (Brewin, Eisler et al. 2003).

One of the outcomes of unmanaged recreation can be user-created trails. In 2003, the US Forest Service estimated that they had more than 14,000 miles of user-created trails on the National Forest System (Bosworth 2005). These unauthorized roads cause erosion, degradation to watersheds and damage to cultural resource sites (Cordell 2004).

In the province of Alberta, access is of particular concern for two species: grizzly bears and woodland caribou (Eos Research & Consulting Ltd. 2009). However, only grizzly bears inhabit the study area. Within the Rockies and Foothills regions, grizzly bear habitat is increasingly affected by growing pressure from recreational interests (Eos Research & Consulting Ltd. 2009). Increasing levels of recreational use, especially mechanized forms of travel, are widely believed to cause adverse effects to grizzly bears (Zimmerman, Stashko et al. 2003). Although wildlife species are affected by recreational disturbance of habitat, research has yet to clarify how significant these effects are to wildlife populations and communities, and which habitat disturbances are most damaging to wildlife (Knight and Gutzwiller 1995). For an extensive review of existing research on the effects of recreation on wildlife in the Rocky Mountains, see the Montana Chapter of The Wildlife Society's report coordinated by Joslin and Youmans (1999).

A societal emphasis on recreation as the primary use of public lands has highlighted the significance of potential effects of recreational development, including cumulative effects (Joslin and Youmans 1999). Cumulative environmental effects related to access have three main causes:

> (1) loss of ecosystem structure and function, including habitat; (2) activities associated with easier access, including the presence of increased numbers of humans and machines, illegal hunting, presence of more toxic substances and other wastes,

> and everything else that is associated with more people and industry; and (3) cumulative exacerbation of the effects of all ready existing activities and developments, both in additive and in interactive ways (Epp 2003, p. 4).

Social Dimensions of Recreation Use

Activities that preclude other recreation users from an area or activities that disrupt the enjoyment and compromise the safety of other users can be considered incompatible. According to Andereck, Vogtisan and others (2001), although conflict occurs among recreation user groups, most often researchers have reported asymmetric antipathy, with some groups expressing more negative evaluations than other groups. While studies have generally found trail users are amenable toward meeting others engaged in the same activity, they perceive faster and more mechanized activities negatively.

In a series of case studies on US National Forests, recreation conflict was described at several levels: 1) at the field (or trail) level, between motorized and non-motorized users, and, 2) at the political, or ideological level (US Institute for Environmental Conflict Resolution and the Morris K. Udall Foundation 2005). According to Eos Research & Consulting Ltd (2009), a significant proportion of conflicts in southern Alberta's Forest Land Use Zones relate to non-motorized users concerns for wilderness values, noise levels and other aesthetic effects of motorized traffic. After concerns for aesthetics, some proportion of conflict is due to incompatibility of many motorized and non-motorized recreation uses of public lands in southern Alberta. People using linear corridors as pathways to access remote areas also impact adjacent landowners (Farrand, Finley et al. 2003).

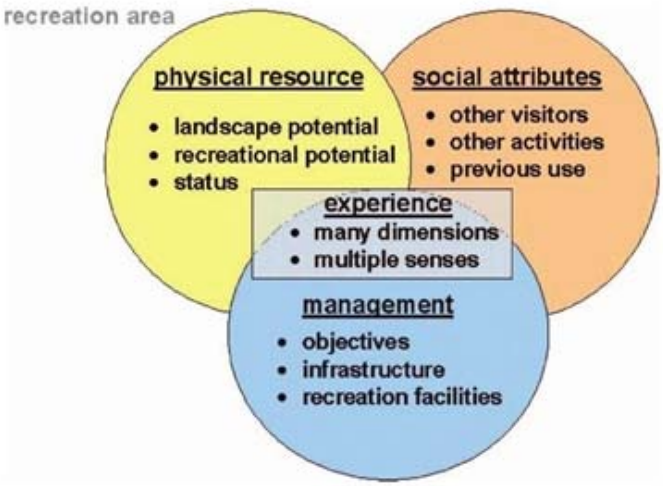
The fact that local users of recreation sites may feel more ownership towards the sites, feel more displaced by other users, and have more accurate expectations about use than non-local users creates the premises that these groups have different preferences, attitudes, and standards toward social and environmental effects (Hughes and Vogelsong 2003). In their study of differences in characteristics, behaviours and attitudes of visitors based on travel distance, Nyaupane and others (2003) found that distance and place attachment are reciprocal- as distance increases, place attachment decreases. Within their study, place attachment was different between the visitors traveling less and more than 50 miles. The authors suggest that those who live within 50 miles consider the area as their "home" and, as a result, frequently visit the area. Although it was not a significant finding, they also discovered the people who live closer to the resource are more likely to feel crowded than visitors from further away (Nyaupane, Graefe et al. 2003). However, in a study of both local and non-local recreation users at Cape Hatteras National Seashore, overall norms and perceptions were distributed equally and were in agreement across both local and non-local users of the area (Hughes and Vogelsong 2003).

Amenity migration can also impact the social dimensions of recreation use. Amenity migration is the movement of people for pleasure rather than economic reasons. It has become a major phenomenon in mountainous regions of western North America (Chipeniuk 2004). People moving in tend to arrive with diverse leisure needs, differing resource expectations, various worldviews, and resource ethics that often are misaligned with those of long-time residents and land managers (Larson, Molzahn et al. 1993; McBeth 1995). "Demographic changes exacerbate conflict both within communities and between local and extra-local groups. These conflicts pose serious questions relative to the ability of groups in the region to work together to solve common problems" (Clark, Stankey et al. 1999, p. 247).

Brooks and Champ (2006) stated that the number of visitors on United States National Forests is increasing while the actual acreage of public land for recreation remains relatively constant. The South Saskatchewan Region- which encompasses the study area- is under increasing pressure to maintain multiple uses including recreational use on the same land base (Government of Alberta 2009). Further, changes in recreation technologies increase the number of people participating in most activities, and potentially expand recreation participation across a broader landscape (Brooks and Champ 2006). An improved understanding of the consequences of increased access has resulted in an increased priority being placed on managing these consequences (Farrand, Finley et al. 2003). Access management is a strategy used to address landscapes where unmanaged outdoor recreation is taking place.

Outdoor recreation can be viewed as a system with three major subsystems. The elements within each subsystem affect each other with unique reciprocal influences, and together create recreation opportunities in the form of different experiences (Mann and Absher 2008) (Figure 2). The emphasis of recreation planning should be on socioeconomic and environmental enhancement, and the use of recreation to achieve those broad goals (Pigram and Jenkins 2006). Recreation access management is a tool that can be used to manage outdoor recreation as a system.

Figure 2: Model of a recreation system



Source: Mann and Absher 2008

Recreation Access Management Planning

Access management encompasses a wide range of management and planning tools- from addressing human behaviour patterns and attitudes towards public lands to implementing land use measures or installing road engineering deterrents (Matthews and Quinn 2003). According to Eos Research & Consulting Ltd (2009), access management can be undertaken with a wide range of goals and objectives in mind, including: wildlife protection and/or restoration; hydrology and terrain stability; aesthetics; managing user conflicts; and budget. Access management tactics include: education/communication, physical measures and enforcement (Eos Research & Consulting Ltd. 2009). For the purposes of this study, access management was defined as determining what types of recreation activities happen on a landscape, and where and when those activities take place.

Farrand, Finley et al. (2003) suggested a model or approach for access management that includes the steps of goals setting, implementation, measurement and evaluation, and review and improvement. During the goal setting stage, several considerations may include: the level of access control needed; specific locations where access management is needed; user groups to be targeted; existing land use activities and land use plans; likely and potential future developments in the area; duration of anticipated effects; specific issues which prompted the need for access management; realistic expectations; costs; stakeholder concerns; regulatory requirements; thresholds that define an acceptable level of impact; safety considerations; ability to measure and evaluate the goal established; and maintenance and operational access requirements (Farrand, Finley et al. 2003). Clearly, access management must address many dimensions and is very complex.

Eos Research & Consulting Ltd. (2009) stated that when done well, access management generally involves a mutually supporting system that includes clear goals and objectives, planning, communication, physical measures, enforcement and monitoring, and review. Potential management strategies vary given the nature of recreation activities and include: restricting the amount, type, and spatial distribution of use; visitor education; temporal restrictions and enhancing site durability (Knight and Gutzwiller 1995; Hammitt and Cole 1998). Hammitt and Cole (1998) noted that spatial distribution of use can include both use dispersal and use concentration.

It is important to consider the likely consequences of any recreation management action to all other parts of the system- both visitor experiences and resource conditions- because everything is

tied to everything else (Hammitt and Cole 1998). This complexity could contribute to the classification of recreation access management planning as a wicked problem.

Recreation Access Management Planning as a Wicked Problem

Three factors create a very challenging environment for all public land management issues in western North America, including recreation use. These challenges include: rapid population growth, multiple and compound challenges to the health of public lands, and the polarized and immature political culture surrounding public lands in the West (Propst 2005). Access management is one of the most difficult land use planning problems:

> The development of policies that limit access to recreational resources is one of the most controversial actions implemented for managing recreation on the public lands but one of the least understood (McCool 2001, p. 49).

According to Eos Research & Consulting Ltd. (2009), "There are no absolutes and no "silver bullets" for those seeking to manage access to public lands" (p. 67). Further, access management is inherently challenging as the public wishes to pursue a traditional freedom to access public land, while governments are legislatively bound to protect the lands that they administer (Matthews and Quinn 2003). Uncertainty and social complexity make the unmanaged recreation issue a wicked problem (Brooks and Champ 2006).

The term 'wicked problem'[2] was coined by Horst Rittel and was described as a:

> class of social system problems which are ill-formulated, where the information is confusing, where there are many clients and decision makers with conflicting values,

[2] Some authors use the terms 'wicked problem' and 'messy problem' interchangeably.

> and where the ramifications in the whole system are thoroughly confusing. The adjective 'wicked' is supposed to describe the mischievous and even evil quality of these problems, where proposed 'solutions' often turn out to be worse than the symptoms (Churchman 1967, B-141).

Brooks and Champ (2006) stated that unmanaged recreation presents a challenge to both researchers and managers of outdoor recreation in the United States because it is shrouded in uncertainty resulting from disagreement over the definition of the problem, the strategies for resolving the problem, and the outcomes of management. Unmanaged recreation has social, economic and ecological components that are complex and extremely difficult to reconcile; dealing with this threat is not primarily a matter of finding technical or regulatory solutions (Bosworth 2005). For instance, where unilateral, command-and-control approaches have been pursued in implementing OHV management programs on National Forests in the United States, the results were less than satisfactory or enduring (US Institute for Environmental Conflict Resolution and the Morris K. Udall Foundation 2005).

According to Brooks and Champ (2006), recreation activities and resulting ecological effects can be complex, but these are not wicked in themselves. It is the social nature of unmanaged recreation that is wicked. The conflict inherent in unmanaged recreation seems to be inextricably tied to intrinsic values of the environment and the worldviews of different stakeholders (Nie 2003). As a result, it is critical to acknowledge 'wickedness' and understand the social context of this problem in order to manage multiple stakeholders in ways that enable them to collectively address effects to the land, natural resource protection, and sustainable outdoor recreation (Brooks and Champ 2006).

Stakeholders understand and define recreation management conditions according to their personal perspectives, insights, and values (Hull, Robertson et al. 2001). According to Burns (2001),

> The basic fact that land resources are *public* sets the stage for multiple perspectives, which in turn generates a set of conflicting values and intentions that, when left unresolved, are capable of further damaging the natural well-being of forests, watersheds, rangelands, and nearby communities caught in a disunifying tidal wave (p. 273).

Propst (2005) stated,

> The political climate associated with public lands – characterized by conflict, vilification, and oversimplification of complex challenges – fans the flames of bitterness on land-use, recreation, and environmental issues and hinders the development of enduring solutions. … In this climate, no interest or perspective wins. The health of lands and the vitality of our communities suffer (p. 17).

Although Propst was speaking about the American West, the same challenges are facing public lands in Alberta.

How stakeholders define the problem is important, as problem definition largely determines strategies for resolution (Allen and Gould 1986). More complete knowledge is needed about recreation visitors' values and relationships with one another and the land in order to address unmanaged recreation (Brooks and Champ 2006). Recreation users' values and inter-relationships can be explored through public participation in access management planning.

Public Consultation

Growing scientific complexity and uncertainty, along with an absence of social consensus about how natural resources should be managed, are driving a demand for, and academic interest in, public participation (Parkins and Mitchell 2005). Eos Research & Consulting Ltd. (2009) conducted a survey of access management stakeholders in the western United States, British Columbia and Alberta. Aspects related to public involvement were the most often raised key success factors or suggestions for improvement when addressing specific access management planning processes. Public participation is also required in certain situations. Both provincial and federal legislation in Canada mandates public input (Epp 2003).

Good public engagement is critical to successful access management planning (Eos Research & Consulting Ltd. 2009). According to McCool and Guthrie (2001), "Understanding that various dimensions are influential in successful (or non-successful) public participation would be an important underpinning to the design of public participation program" (p. 321).

In this next section, I provide a brief overview of the literature regarding what works well and what does not work well within public participation processes.

What Works Well

In their study of the dimensions of successful public participation in messy natural resources management situations, McCool and Guthrie (2001) found the following dimensions to be important: writing a plan and implementing it, learning, interest representation, relationship building, creating responsibility (in the sense of ownership), and gaining social and political acceptability. Based upon their analysis of three U.S. Forest Service public involvement

processes, Twarkins, Fisher and others (2001) noted that both U.S. Forest Service planners and citizens value the following in a forest planning process: transparency, partnership, stakeholder analysis and involvement, multiple methods, dialogue and education. In a survey of western North American access management stakeholders, some of the specific issues listed by respondents included: need for broad, multi-stakeholder representation, understanding individual group's interests and needs, build trust and relationships among participants, need for facilitation, transparent decision making, and clear boundaries and understanding of objectives from the start (Eos Research & Consulting Ltd. 2009).

Public involvement potentially enables the identification of how different values and interests will be affected by proposed actions (McCool and Guthrie 2001). There is evidence that stakeholder participation can improve the quality of environmental decisions by considering more comprehensive information inputs; however, the quality of decisions made through stakeholder participation is strongly dependant on the nature of the process leading to them (Reed 2008). Although getting a plan written and implemented is important, how the planning process is conducted is often fundamental to the public support for it (McCool and Guthrie 2001).

Involving the public early and often throughout a decision-making process is more likely to result in more effective decisions and satisfied stakeholders (Wondolleck and Yaffee 2000; US Institute for Environmental Conflict Resolution and the Morris K. Udall Foundation 2005). Clearly communicating boundaries and objectives at the outset of the process helps to manage expectations and limit stakeholders' frustration with the process (Eos Research & Consulting Ltd. 2009).

Participant access to good information is another key to public consultation done well. According to the US Institute for Environmental Conflict Resolution and the Morris K. Udall Foundation (2005),

> [T]he public's interest in this information is growing, as is their sophistication about how to gather, use, and disseminate this information. Decisions made behind closed doors invite long lasting mistrust, alienate key stakeholder groups, and ultimately make OHV management and enforcement a much more difficult task (p. 77).

A number of the early review articles in the natural resource literature identified a clear relationship between trust and successful participatory processes, and this trust factor is articulated at the interpersonal level again and again (Parkins and Mitchell 2005). Stakeholder participation needs to be underpinned by a philosophy that emphasizes empowerment, equity, trust and learning (Reed 2008). Parkins and Mitchell (2005) stated:

> Individuals who may wish to participate in public policy issues, who make a conscious choice to invest their political resources in a particular issue of concern (perhaps because they distrust the current actors in various ways), are more likely to enter such deliberative processes if certain guarantees are in place: namely, ones that assure their safety, allow their voice to be heard, and provide hope to influence outcomes. Trust, from this perspective, ceases to be interpersonal, and takes on an institutional flavour. Actors may not trust each other, but they do (or maybe hope to) trust the procedures for engagement (p. 537).

The extent to which a decision authority can open up and share its decision-making process with other parties defines decision space (Walker 2004). Walker (2004) contends that sharing decision space involves sharing a form of power, and that the greater the decision space is, the greater the potential for meaningful public participation. Planners may invite the public to assist in writing the plan, and may suggest important roles of the public engaging in requisite

monitoring components (McCool and Guthrie 2001). Through their case study work on collaboration, Wondolleck and Yaffee (2000) found that direct face-to-face interaction between decision-making authorities and stakeholders was critical. Field trips are an effective way for citizens and scientists to interact 'on the ground' with members of different interest groups in a mutual learning environment (Walker and Daniels 2001).

General levels of satisfaction with public participation appear to increase when deliberations and outcomes are clearly linked (McCool and Guthrie 2001). Stakeholder groups have a hard time accepting an agency-produced decision that they do not "own" because they have not been involved in thinking through the decision in a real way. They frequently do not understand the rationale behind decisions and resent having decisions imposed upon them (Wondolleck and Yaffee 2000). Optimal decisions are understood in the context of balancing competing interests, where all parties who are involved in the process have a fair chance of shaping the final outcome (Parkins and Mitchell 2005). Land managers need to show the correlation between stakeholder input and the end product, as stakeholders need to see that their advice has been taken seriously (Eos Research & Consulting Ltd. 2009).

Evaluation, both during and after a process, can allow public participation practitioners to better understand and structure efforts that foster understanding and respectful, open and thoughtful dialogue (Tuler and Webler 2006). Finally, McCool and Guthrie (2001) found implementation of the plan is critically important to scientific, managerial and public participants in ecosystem based management projects.

What Doesn't Work Well

Conventional methods for public participation are often part of a strategy of command and control (Weber 1998). Arnstein's ladder of citizen participation (1969) is one of the earliest and most famous works on the nature of citizen participation because it equates citizen participation to citizen power and establishes the various levels (rungs) at which this happens; higher involvement happens in the upper rungs where citizens are given the most "decision-making clout" (Arnstein 1969). However, conventional public participation activities- for example scoping meetings, public hearings, letter-writing and open houses- do not empower citizens, but arise from and maintain decision-maker control (Walker 2004).

According to Walker (2004), conventional public participation approaches are in line with a planning strategy that is "consultative rather than collaborative, one that emphasizes highly controlled communication rather than open interaction" (p. 121). There are a number of limitations to conventional public participation techniques including: uncertainty over how citizen comments are used, the limited impact that the comments have on the outcome, the quasi-arbitration authority of the deciding official (the agency as arbitrator), the formality of the communication environment, and the participant perceptions of a zero-sum game (Walker and Daniels 2001).

According to Walker (2004), communication activity in conventional public participation limits the quality of information that an agency receives; for example, given the proportion of people for whom public speaking produces anxiety, hearing-type meetings tend to draw comments from only the most motivated people. As a result, the comments collected tend to be more extreme than they might be in a setting where dialogue is more normal (Walker 2004). Theoretical

research shows that participants state extreme demands and use volatile rhetoric because they assume the decision maker/arbitrator will find a way to split the difference between the groups (Walker and Daniels 2001). To sway the decision its way, each group must be more forceful and compelling than the other groups – in other words, the "squeaky wheel gets the grease" (Walker and Daniels 2001).

According to Parkins and Mitchell (2005), the process of including people, and the conditions that enable them to engage meaningfully in debate are not easily achieved. One form of exclusion can occur when opportunities for discussion are limited to specific key spokespersons and specific kinds of arguments:

> [T]his may result from cultural factors (i.e., language difficulties or protocol may prevent certain individuals from speaking out; likewise, Western scientific arguments may exclude other forms of knowledge), procedural impediments (such as when allotted time for discussion and debate is limited), or strategic motives (inadequate communication and information sharing may be used to group advantage) (Parkins and Mitchell 2005, p. 534).

There may be substantial attitudinal barriers to participating in public involvement processes. Some portions of a population may feel so alienated, frustrated, intimated, or disempowered that they do not enter the process at all (Walker and Daniels 2001). As natural resource management agencies strive to increase the involvement of the public in decision-making processes, this collaborative management effort is threatened by declines in citizen involvement and levels of trust in individuals and institutions (Payton, Fulton et al. 2005). Several planners have stated that public apathy toward natural resource planning may be derived from "a sense of cynicism, disenchantment, or lack of trust, leading to the belief that agencies don't acknowledge, hear or honour what the public has to say" (Lachapelle, McCool et al. 2003, p. 487).

Future Directions: Paradigm Shifts for Access Management Planning

McCool and Guthrie (2001) stated that the increasingly turbulent and contentious settings in which natural resource management occurs are often typified by contested or ambiguous goals and lack of scientific agreement on cause-effect relationships. These settings are termed 'messy problems' or 'wicked problems', as discussed above. Making use of a science-based model of planning to deal with messy problems is increasingly problematic because disputes tend to concurrently involve conflict over both means and ends (McCool and Guthrie 2001). Regulation and enforcement alone are insufficient for maintaining valued landscapes, as society cannot depend upon increasingly centralized decision-making and regulatory constraints to solve our disputes (Propst 2005).

According to Weber (2003), many scholars and practitioners now maintain that

> [E]ffective environmental policy programs require new rules of engagement that recognize the critical importance of social complexities that strengthen collaboration among diverse government, civic and business actors at state and local levels (p. xiii).

Harper and Stein (2005) advocate an approach they call 'Dialogical Planning' which combines elements of planning theory resulting in an approach that is liberal, pragmatic, communicative, critical, incremental and political. The communicative element of this approach is particularly relevant to the collaborative and consensus-based types of access management planning described below. Communicative Action involves "interactive, interpretive, mutual learning, shareholder-based, consensus-building dialogic processes" (Harper and Stein 2006, p. 144).

A number of non-conventional methods for involving the public in access management planning have been evolving in recent years. These methods include learning and collaboration, and ecosystem-based management.

Learning and Collaboration

In messy situations, emphasis must be placed on learning and consensus building. Learning is important because understanding cause-effect relationships is fundamental to selecting an effective alternative, and learning from the consequences of selecting that alternative, and consensus building because agreement on goals is necessary before socially acceptable action can take place (McCool and Guthrie 2001). In politicized contexts, the absence of clear agreement about goals and the disagreement among scientists about cause-effect relationships requires planning to be learning oriented and collaborative (Krumpe and McCool 1997). Critical to collaborative learning is the combining of scientific and community knowledge (Burns 2001).

As a public participation strategy, collaboration differs considerably from the conventional model of open houses, public hearings, and comment periods (Walker 2004). Rather than perceiving public involvement as a statutory requirement, collaborative efforts that view the ideas and buy-in of partners as integral to finding an effective solution are more likely to achieve good outcomes (Wondolleck and Yaffee 2000). According to Daniels and Walker (2001), some key characteristics of collaboration that clarify these differences are:

> 1) it is less competitive, 2) it features mutual learning and fact-finding, 3) it allows underlying value differences to be explored, 4) it resembles principled negotiation, focusing on interests rather than positions, 5) it allocates the responsibility for implementation across many parties, 6) its conclusions are generated by participants through an interactive, iterative, and reflexive process, 7) it is an ongoing process,

> and 8) it has the potential to build individual and community capacity in such areas as conflict management, leadership, decision making and communication (p. 63).

According to the US Institute for Environmental Conflict Resolution and the Morris K. Udall Foundation (2005), collaboration can mean different things to different stakeholders:

> To some, it means simple compromise; to others it means working together to do joint problem-solving; still others believe it means complete devolution of authority to a community group. The truth is that collaboration can involve a spectrum of activities and approaches – and a collaborative process does not always mean that everyone gets to have a piece of the pie. What it does mean – generally speaking – is that different viewpoints can be expressed, all voices heard, in a safe environment. It means working together (co-labouring) to achieve a common goal (p. 76).

Based upon his experience, and the experience of the Sonoran Institute, Propst (2005) stated that the opportunity to use collaboration to resolve land-use conflict comes down to three principles: 1)tap into the power of place; 2) articulate a compelling vision for the future of a landscape that appeals to the hopes and aspirations of the public; and 3) produce tangible outcomes through collaborative partnerships (p. 19).

In their analysis of successful natural resource management collaboration case studies, Wondolleck and Yaffee (2000) observe that

> [T]he most successful collaborative efforts fostered two-way, interactive flows of information, and decision making occurred through an open, interactive process rather than behind closed agency doors. Such efforts actively involved people throughout a planning or problem-solving process so that they learned together, understood constraints, and developed creative ideas, trust, and relationships. Direct face-to-face interaction between stakeholders and decision-makers was critical (p. 105).

Ecosystem-based Management

Incorporating an ecosystem-based management approach into recreation planning requires taking a holistic view of the recreation setting that takes into account other uses and values of the area (Matthews and Quinn 2003; St. Arnaud 2004). Walker and Daniels (2001) stated that as agencies accept and implement new resource management approaches, such as ecosystem-based management, they need to utilize public participation activities that are in line with those approaches. For instance, ecosystem-based management emphasizes a continual rather than static planning endeavour.

Sense of Place

In order to engage in ecosystem management, natural resource managers must consider the perceptions of citizens residing in areas to be managed in a sustainable fashion (Cantrill 1998). 'Sense of place' can be defined as one's emotional and symbolic identification with an area (Agnew 1989). Place attachment has at least two dimensions: 1) a place dependence, which reflects the importance of the place in facilitating a user's activity, and 2) a more affective place identity, which reflects an individual's valuing of a setting for more symbolic or emotional reasons (Moore and Graefe 1994). Williams and Carr argue that at stake for resource managers is not how a sense of place is created in the mind of local stakeholders, but what that sense of place entails and the extent to which such meanings are shared within communities affected by natural resource policies (1993). According to Cheng, Kruger and Daniels (2003):

> Place-based research should not be confused with advocating greater local control over natural resource decision making. By the same token, place-based research should also seek to question the status quo and to give real meaning and substance to public involvement in natural resource politics (p. 101).

Community-based Ecosystem Management

Community-based ecosystem management's (CBEM) fundamental premise is connecting communities to public lands for the purpose of increasing ecosystem stewardship and community sustainability (Burns 2001). According to Burns (2001), for CBEM to appropriately serve the public interest, new social and institutional relationships must be formed, collaborative learning needs to occur and capacities in community participation and ecological literacy will need to develop.

Grassroots Ecosystem Management

Grassroots ecosystem management, or GREM, encompasses decentralized governance, shared power among public and private actors, collaborative, consensus-based decision processes, holistic missions (environment, economy, and community), results-oriented management, and broad civic participation in lieu of centralized hierarchy, government experts in control, specialized agencies, and layer upon layer of written rules and procedures (Weber 1999). GREM is primarily, but not entirely, initiated by citizens and/or non-governmental entities like non-profit groups (Weber 2003).

Adaptive Management

Adaptive management is one of the key principles of an ecosystem management approach (Grumbine 1997). Adaptive management strives to incorporate the views and knowledge of all interested parties, and "it accepts the fact that management must proceed even if we do not have all the information we would like, or we are not sure what all the effects of management might be" (Johnson 1999a, p. 2). It is useful for the management of natural resources in the face of

uncertainty, as human use of resources and the need for management will continue in spite of uncertainty (Johnson 1999b).

> [Adaptive management] is based on the insight that the ability to predict future key drivers influencing an ecosystem, as well as system behaviour and responses, is inherently limited. Hence management must be adaptive and include the ability to change management practices based on new experience and insights (Pahl-Wostl 2007, p. 51).

The overall goal of adaptive management is not to maintain optimal condition of the resource, but to develop an optimal management capacity (Johnson 1999a). Shindler and Aldred Cheek (1999) state that public involvement is critical to interactive processes like adaptive management, and propose six concepts common to successful integration of citizens into adaptive management:

> Citizen-agency interactions are more effective when (1) they are open and inclusive, (2) they are built on skilled leadership and interactive forums, (3) they include innovative and flexible methods, (4) involvement is early and continuous, (5) efforts result in action, and (6) they seek to build trust among participants (p. 1).

Implementing these concepts works to develop an enduring relationship between land management agencies and its constituents (Shindler and Aldred Cheek 1999). Interestingly, the above listed concepts are in alignment with many of the concepts associated with effective public consultation.

CHAPTER FOUR: RESULTS

The online survey was available from October 6 to December 20, 2008. Nine hundred and forty five individuals responded to the survey. I am not able to provide an overall survey response rate because I was not able to randomly sample the population of recreation users of public lands in southwestern Alberta. A complete list of recreation users for this region did not exist, so I used purposive sampling through the snowball technique to generate survey responses. Please see chapter two for further details on the sampling strategy.

The survey was reliable given the robust sample size. Six hundred respondents were required for a statistically significant sample with a 95% confidence level and a confidence interval of four (Creative Research Systems 2010). I violated the requirement for the selection of a random sample but this is a recognized limitation of online surveys. It is not feasible to draw a sample where every member of the population has a known chance of being selected from a population of online users (Duda and Nobile 2010). A "master list" of email addresses for recreation users in the study area did not exist.

Descriptive Statistics

Demographics

Most respondents (80%) were male. Age was normally distributed with a majority of respondents represented by the following age groups: 30-39 years old (22%), 40-49 years old (23%) and 50-59 years old (24%) (Appendix E – Table 1).

A total of 766 respondents provided their postal codes. Out of this total, 316 respondents (41%) lived in Calgary or Edmonton (large city). The remaining 450 respondents (59%) lived in other areas (other).

A small number of respondents (107, 11%) did not recreate in the study area. These respondents were redirected to the public participation section of the survey, and they were not given the option to provide their views on recreation access management within the study area.

The majority of respondents (371, 45%) had been recreating on public lands in southwestern Alberta for over 21 years. Additionally, a large number of respondents (160, 20%) had been recreating in the study area for 11-20 years.

Respondents who indicated that they participated less than once a year or more in riding quads, riding dirt bikes, driving off-road trucks (on recreation trails), and/or riding snowmobiles were designated as motorized users. Respondents who indicated that they never participated in any of these activities were designated as non-motorized users. Non-motorized users comprised most respondents (554, 59%), while 41% of respondents (391) were motorized users.

Just over half of respondents (423, 52%) did not belong to any organized recreation use groups, while just under half of respondents (390, 48%) were members of one or more organized recreation use groups.

Overall Attitudes and Beliefs

The majority of respondents (428, 54%) indicated their recreation experience had 'decreased/declined', while only 15% of respondents (115) specified that their recreation

experience had ‘increased/improved’ since they first began recreating on public lands in southwestern Alberta (Figure 3). Over half of respondents (430, 57%) agreed or strongly agreed that “random camping is an important part of the overall quality of their experience on public lands.” Twenty two percent of respondents (172) disagreed or strongly disagreed that “random camping is an important part of the overall quality of their experience on public lands” (Figure 4).

The results for “it is important to keep public lands open for all types of recreation users” were somewhat polarized as 36% of respondents (283) stated they strongly agreed with the statement, while 15% of respondents (118) strongly disagreed with the statement (Figure 5). Most respondents (647, 84%) strongly agreed “it is important to maintain recreation opportunities for future generations” (Figure 6). Respondents acknowledged “recreation use on public lands in southwestern Alberta is increasing,” as 83% of respondents (608) stated that they agreed/strongly agreed with this statement (Figure 7).

There was little agreement between respondents that “recreation users demonstrate responsible use of public lands” as responses were spread evenly between the ‘disagree’ through ‘agree’ categories. Just under a quarter of respondents (183, 24%) indicated they somewhat agreed with this statement (Figure 8). A majority of respondents agreed that “education is the best way to encourage responsible use of public lands” as 81% of respondents (622) indicated that they somewhat agreed/agreed/strongly agreed (Figure 9).

Respondents expressed diverse opinions on the statement “there are enough rules, regulations and fines to guide responsible use of public lands.” Eighteen percent of respondents (133) both strongly disagreed and agreed with this statement (Figure 10). Most respondents disagreed with

the statement “there is enough enforcement to encourage responsible use of public lands.” Seventy three percent of respondents (560) indicated that they somewhat disagreed to strongly disagreed with this statement (Figure 11).

The majority of respondents agreed that “there is a need for staging areas and bathroom and garbage facilities on public lands in southwestern Alberta.” Eighty four percent of respondents (645) somewhat agreed to strongly agreed with this statement (Figure 12).

Respondent feedback for three of the statements on access management planning indicated that there was some level of agreement between recreation users that access management planning is needed. Eighty four percent of respondents (644) somewhat agreed to strongly agreed that “there is a need to determine what recreation activities are allowed to occur, and where they are allowed to occur, on public lands in southwestern Alberta.” Only 12% of respondents (91) somewhat disagreed to strongly disagreed with this statement (Figure 13).

Three quarters of respondents (567) indicated they somewhat agreed to strongly agreed with the statement “there is a need to separate recreation uses that may be incompatible on public lands in southwestern Alberta” (Figure 14). Finally, 78% of respondents (590) stated they somewhat agreed through strongly agreed that “there is a need for a formal access management plan for public lands in southwestern Alberta” (Figure 15).

Just over half of respondents (412, 55%) disagreed on some level with the statement “the current level of impacts from recreation on public lands in southwestern Alberta is acceptable” (Figure 16). In comparison, sixty seven percent of respondents (499) disagreed on some level that “the

current level of impacts from industrial activities, such as logging and oil and gas development, is acceptable" (Figure 17).

The great majority of respondents (661, 92%) had observed effects from recreational activities during recent visits to public lands in southwestern Alberta. Just under half of respondents who observed effects from recreational activities (306, 49%) felt that these effects 'detracted somewhat' from their experience, while 39% (240) felt that these effects 'detracted greatly' from their experience. Only 12% (73) felt that observed effects from recreational activities did not influence their experience (Figure 18).

Figure 3: Change in quality of recreation over time

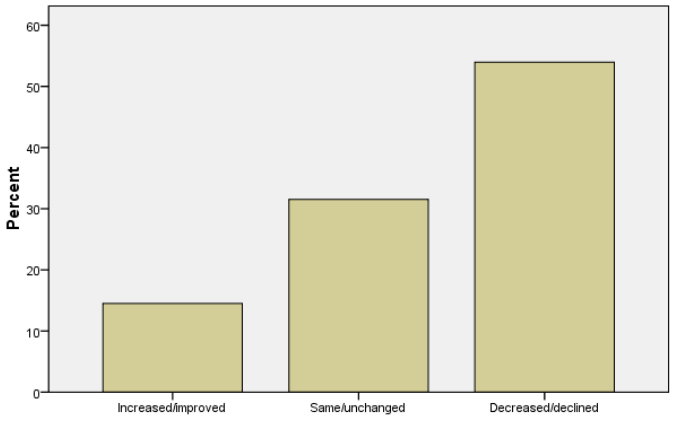


Figure 4: Random camping is an important part of the overall quality of my experience on public lands.

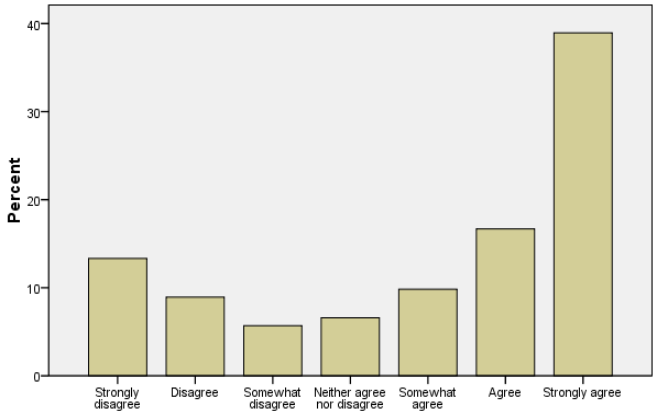


Figure 5: It is important to keep public lands open for all types of recreation uses.

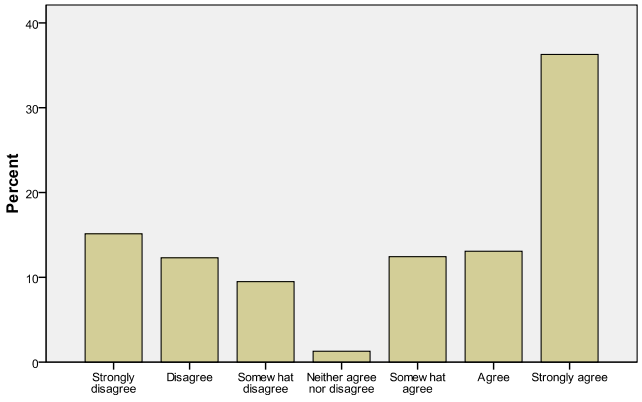


Figure 6: It is important to maintain recreation opportunities for future generations.

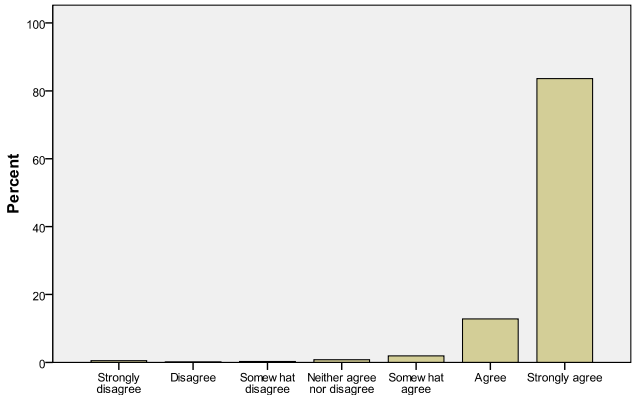


Figure 7: Recreation use on public lands in southwestern Alberta is increasing.

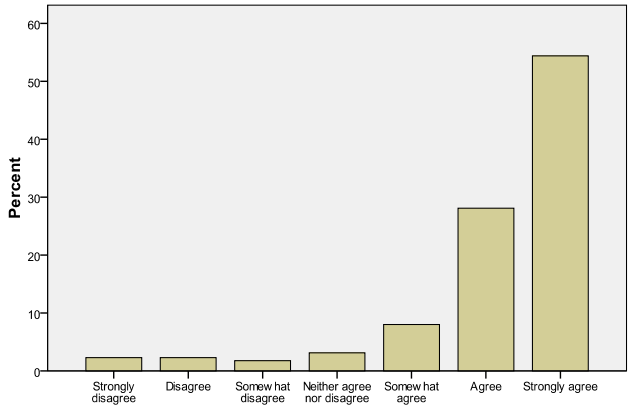


Figure 8: Overall, recreation users demonstrate responsible use of public lands.

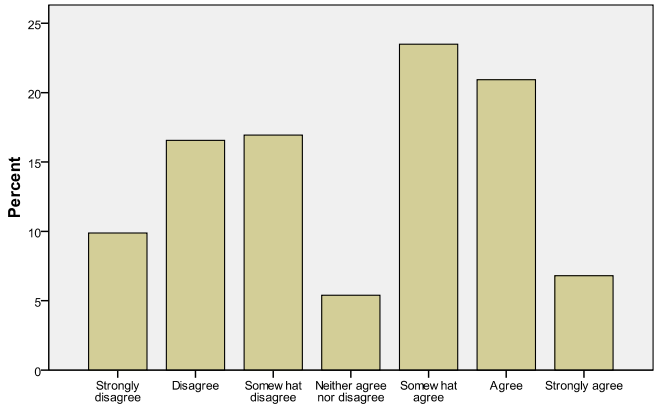


Figure 9: Education is the best way to encourage responsible use of public lands.

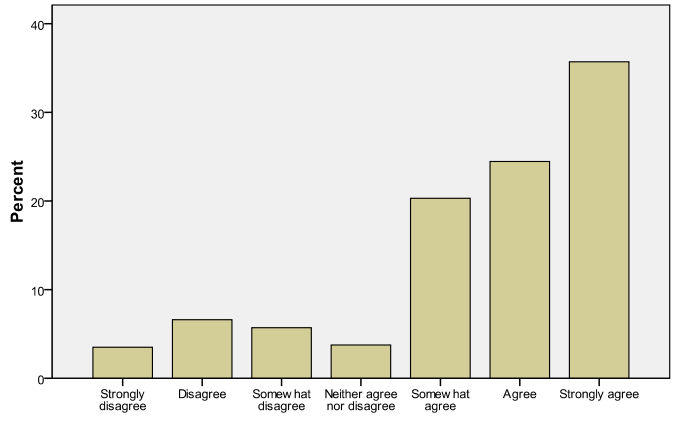


Figure 10: There are enough rules, regulations and fines to guide responsible use of public lands.

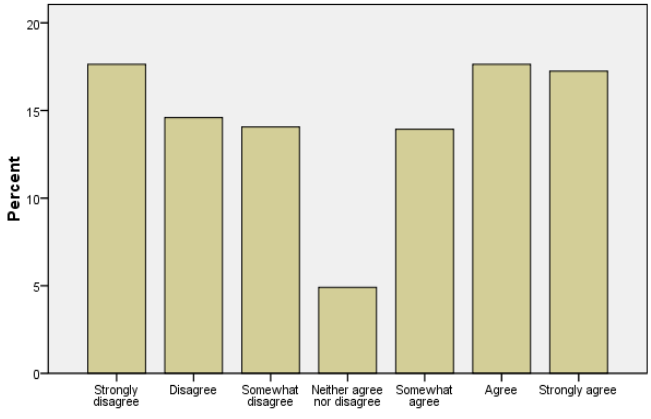


Figure 11: There is enough enforcement to encourage responsible use of public lands.

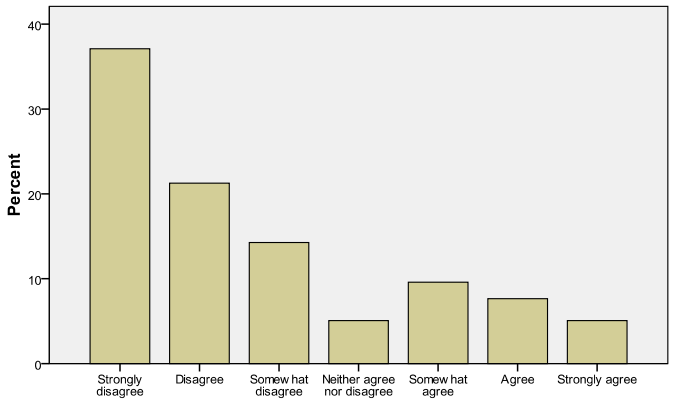


Figure 12: There is a need for staging areas, and bathroom and garbage facilities on public lands in southwestern Alberta.

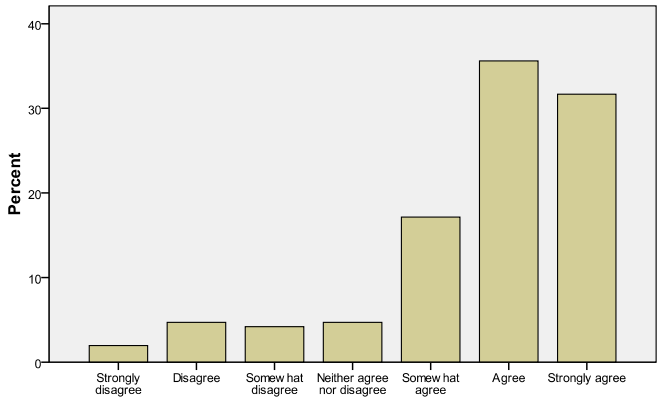


Figure 13: There is a need to determine what recreation activities are allowed to occur, and where they are allowed to occur, on public lands in southwestern Alberta.

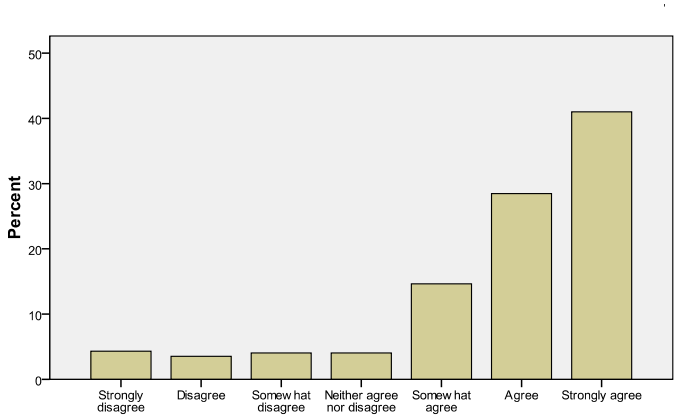


Figure 14: There is a need to separate recreation uses that may be incompatible on public lands in southwestern Alberta.

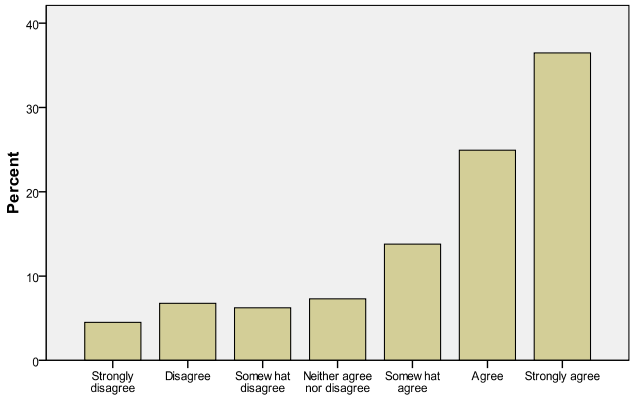


Figure 15: There is a need for a formal access management plan for public lands in southwestern Alberta.

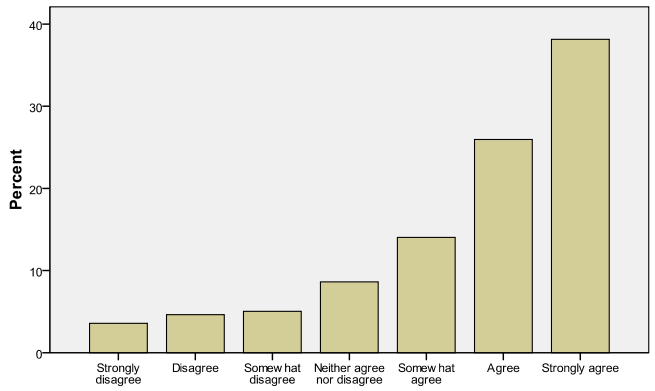


Figure 16: The current level of impacts from recreation on public lands in southwestern Alberta is acceptable.

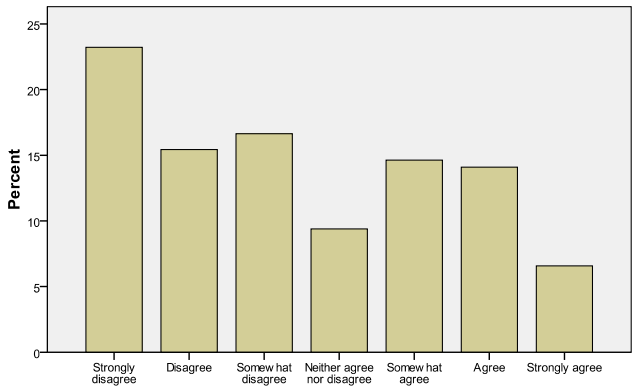


Figure 17: The current level of impacts from industrial activities, such as logging and oil and gas development, is acceptable.

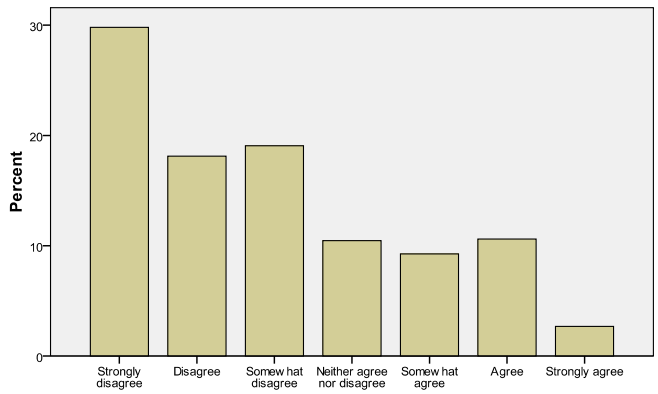
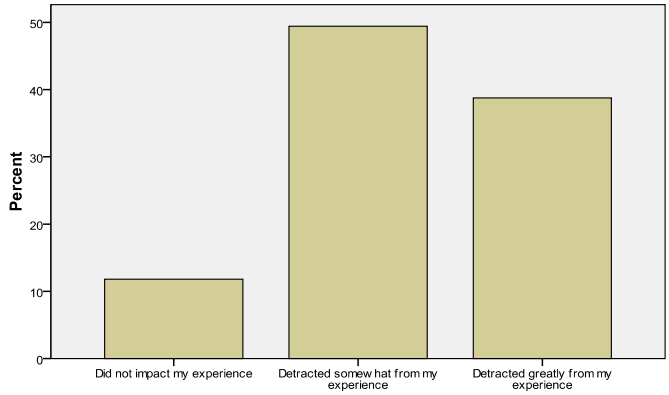


Figure 18: Influence of observed effects on recreation experience



Public Participation

A large number of respondents (635, 67%) had participated in public consultation for land-use. For those respondents who had previously participated in public consultation, forty seven percent (442) responded to an online survey; thirty two percent (300) attended a public meeting; twenty nine percent (274) wrote a letter; twenty seven percent (255) attended an open house; seventeen percent (162) responded to a paper survey; ten percent (90) sat on an advisory committee; and seven percent (65) responded to a phone survey.

All respondents were asked to rate the desirability of specific types of public consultation for access management planning on public lands in southwestern Alberta. Most respondents indicated a 'neutral' level of desirability for: writing a letter (268, 34%); completing paper surveys (276, 35%); and completing phone surveys (201, 25%) (Appendix E – Table 5). The majority of respondents indicated that the following types of public consultation were 'more desirable': attending open houses (357, 45%); attending public meetings (388, 49%); attending meetings with decision-makers (334, 41%); and completing online surveys (354, 44%). Attending meetings with decision-makers on the land was considered 'most desirable' by 37% of respondents (293).

Sixty-one percent of respondents (575) indicated they would like to be notified about public consultation through a notice in a local newspaper. The other three options for notification about public consultation were selected by less than half of respondents: forty eight percent of respondents (452) would like to hear a public consultation announcement

on a local radio station; forty two percent of respondents (396) would like to see an advertisement on a local television station; and thirty four percent of respondents (322) indicated they would like to read a posting on a government website.

Forty three percent of respondents (405) expressed a desire for feedback by email following public consultation. Twelve percent of respondents (114) stated they would like to receive feedback by mail, while ten percent of respondents (95) indicated they would like to receive feedback on the internet. Less than ten percent of respondents expressed a desire for the following types of feedback following public consultation: specific feedback (78, 8%); feedback by media (55, 6%); feedback in person (40, 4%); feedback by telephone (31, 3%); feedback by club communication (22, 2%); and no feedback (6, 0.6%).

Bivariate Comparisons

Access Management Statements

Factor Analysis – MANOVA and Nonparametric Tests

Responses to fourteen survey questions (statements with a 7-point Likert scale: (1) strongly disagree, (2) disagree, (3) somewhat disagree, (4) neither agree nor disagree, (5) somewhat agree, (6) agree, and (7) strongly agree) were used as variables in the factor analysis. Three factors were suggested by Kaiser's Normalization criterion. Varimax rotation converged in five iterations and resulted in three rotated components, which I interpreted to be: beliefs, management and outliers (Table 1).

I accepted the three factors because they were a good fit with my research purposes to: examine views of recreation users of public lands in southwestern Alberta with regard to the current situation on the landscape (beliefs factor), and potential recreation access management on public lands (management factor). Factor one (beliefs) was characterized by prominent loadings of statements related to respondents' beliefs about what was currently happening on the study area landscape and general beliefs about access management. Factor two (management) was characterized by prominent loadings of statements related to respondents' views about specific access management actions. These statements centered on infrastructure and determining what recreation activities occur when, and where, on public lands in southwestern Alberta. Factor three (outlier) was characterized by prominent loadings of two statements: "it is important to maintain recreation opportunities for future generations" and "recreation use on public lands in southwestern Alberta is increasing." These two statements were related to respondents' beliefs about future use, and perceptions of current use, on the landscape.

Cronbach's Alpha was acceptable for the beliefs and management factors, however Cronbach's Alpha was low for the outlier factor. In addition to a problematic Cronbach's Alpha value, the outlier factor had several other concerning characteristics including a low Eigen value, the fact that it explained a small percentage of variance, and the fact that recoding efforts did not help to achieve a normal distribution. For these reasons I decided not to include this factor in the results chapter for this MDP.

Table 1: Principal Component Analysis of Access Management Statements - Rotated Components

Statement	Factor loadings	Eigen-value	Percent of Variance	Cronbach's Alpha
Beliefs		3.958	28.275	.873
Random camping is an important part of the overall quality of my experience on public lands.	.430			
It is important to keep public lands open for all types of recreation uses.	.652			
Overall, recreation users demonstrate responsible use of public lands.	.741			
Education is the best way to encourage responsible use of public lands.	.659			
There are enough rules, regulations and fines to guide responsible use of public lands.	.766			
There is enough enforcement to encourage responsible use of public lands.	.698			
The current level of impacts from recreation on public lands in southwestern Alberta is acceptable.	.744			
The current level of impacts from industrial activities, such as logging and oil and gas development, is unacceptable	.596			
Management		2.956	21.112	.694
There is a need for staging areas, and bathroom and garbage facilities on public lands in southwestern Alberta.	.312			
There is a need to determine what recreation activities are allowed to occur, and where they are allowed to occur, on public lands in southwestern Alberta.	.832			
There is a need to separate recreation activities that may be incompatible on public lands in southwestern Alberta.	.828			
There is a need for a formal access management plan for public lands in southwestern Alberta.	.752			
Outlier		1.213	8.667	.228
It is important to maintain recreation opportunities for future generations.	.780			
Recreation use on public lands in southwestern Alberta is increasing.	.555			
Total Variance explained			58.055	

Multivariate Analysis of Variance (MANOVA)

Descriptive statistics and results of both the overall comparisons and univariate comparisons (beliefs and management) are reported below. Only significant differences at the p=0.05 level for post hoc comparisons are reported.

Age

As the age groups increased in years, there was a trend of reduced levels of agreement with the beliefs factor. The '18-29 years old' group had a mean of 4.33, while the '60 and over years old' group expressed the lowest level of agreement with a mean of 3.37. There was a trend of increasing levels of agreement with the management factor as the age groups increased in years. The '18-29 years old' group had the lowest level of agreement with the management factor ($\bar{x}$=5.29), while the '60 and over years old' group had the highest level of agreement ($\bar{x}$=6.19) (Appendix E – Table 6.1).

There was a significant difference (p=≤0.0004) in the overall comparison (beliefs and management) between the age groups. The univariate F values for beliefs and management were also significant at p=≤0.0004 for both factors. Post hoc comparisons for the beliefs factor indicated that the '60 and over years old' age group was significantly different from each of the other age groups. Post hoc tests indicated significant differences for the management factor between the '60 and over years old' age group and all other age groups. Additionally, there were significant differences for the management factor between the '50-59 years old' group and both the '18-29 years old' and the '30-39 years old' groups (Appendix E – Table 6.2).

Membership

Respondents who belonged to an organized recreation use group expressed slightly higher levels of agreement ($\bar{x}$=4.31) with the beliefs factor than respondents who did not belong to an organized recreation use group ($\bar{x}$=3.79). However, organized recreation use group members expressed slightly lower levels of agreement ($\bar{x}$=5.45) with the management factor than those who did not belong to a group ($\bar{x}$=5.79) (Appendix E – Table 7.1).

There was a significant difference ($p=\leq 0.0004$) in the overall comparison (beliefs and management) between the membership groups. The univariate F values for beliefs and management were also both significant at $p=\leq 0.0004$ (Appendix E – Table 7.2).

Motorized

Motorized users expressed a higher level of agreement with the beliefs factor ($\bar{x}$=4.82) than did non-motorized users ($\bar{x}$=3.33). The reverse held for the management factor where non-motorized users expressed a higher level of agreement ($\bar{x}$=6.11) than motorized users ($\bar{x}$=5.08) (Appendix E – Table 8.1).

There was a significant difference ($p=\leq 0.0004$) in the overall comparison (beliefs and management) between the motorized and non-motorized groups, and the univariate F values for beliefs and management were also significant at $p=\leq 0.0004$ (Appendix E – Table 8.2).

Residence (Large City vs. Other)

'Large city' respondents (Calgary and Edmonton) expressed a similar level of agreement with the beliefs factor ($\bar{x}$=4.12) as did respondents from 'other communities' ($\bar{x}$=3.96). Both 'large city' and 'other community' respondents shared a similar level of agreement on the management factor with means of 5.55 and 5.64 respectively (Appendix E – Table 9.1).

The residence variable was the only independent categorical variable that did not result in any significant differences in the ANOVA results for both the overall and univariate comparisons of the beliefs and management factors (Appendix E – Table 9.2).

Gender

There was a slight difference between the genders in levels of agreement with the beliefs and management factors. Males expressed a slightly higher level of agreement with the beliefs factor ($\bar{x}$=4.06) than did females ($\bar{x}$=3.40), while males expressed a slightly lower level of agreement with the management factor ($\bar{x}$=5.79) than did females ($\bar{x}$=6.15) (Appendix E – Table10.1).

There was a significant difference ($p=\leq 0.0004$) in the overall comparison (beliefs and management) between the gender groups, and the univariate F values for beliefs and management were also significant ($p=\leq 0.0004$ for both factors) (Appendix E – Table 10.2).

Tenure

All three tenure groups expressed similar levels of agreement with the beliefs factor. Respondents who had recreated in the study area for 'less than one year to five years' (group three) had a mean of 4.45. Respondents who had been recreating in the area for 'six to twenty years' (group five) possessed a mean of 3.82. Finally, those who had the longest tenure ('over 21 years' or group six) possessed a mean of 4.04. All three tenure groups expressed similar levels of agreement on the management factor with means of 5.47, 5.80 and 5.57 for groups three, five and six respectively (Appendix E – Table 11.1).

There was a significant difference in the overall comparison (beliefs and management) between the tenure groups ($p=\leq 0.0004$). The univariate F values for beliefs and management were also significant at $p=\leq 0.0004$ and $p=0.007$ respectively. Tukey HSD comparisons indicated that there were significant differences for the beliefs factor between the group with the shortest tenure (group three) and both groups five ('six to 20 years', $p=\leq 0.0004$) and six ('over 21 years', $p=0.01$). Significant differences for the management factor existed between group five and groups three ($p=0.01$) and six ($p=0.03$) (Appendix E – Table 11.2).

Change in Recreation Quality

As the recreation quality groups move from 'increased/improved' (group one) through 'same/unchanged' (group two) to 'decreased/diminished' (group three), there was a trend of reduced levels of agreement with the beliefs factor. The 'same/unchanged' group had a mean of 4.84, while the 'decreased/diminished' group expressed the lowest level of

agreement with a mean of 3.49. The 'increased/improved' and 'same/unchanged' groups had a similar level of agreement on the management factor with means of 5.47 and 5.45 respectively. The 'decreased/diminished' group had a slightly higher level of agreement on the management factor ($\bar{x}$=5.79) (Appendix E – Table 12.1).

There was a significant difference (p=≤0.0004) in the overall comparison (beliefs and management) between the change in recreation quality groups. The univariate F values for beliefs and management were also significant at p=≤0.0004 and p=0.004 respectively (Appendix E – Table 12.2). Tukey HSD post hoc comparisons for the beliefs factor indicated that significant differences existed between the 'decreased/diminished' group and the 'increased/improved' group (p=≤0.0004) and the 'same/unchanged' group (p=≤0.0004). Tukey HSD post hoc comparisons for the management factor revealed that the 'decreased/diminished' group was significantly different from both the 'increased/improved' group (p=0.043) and the 'same/unchanged' group (p=0.006).

Effects & Influence on Recreation Quality

There was a trend of decreasing level of agreement on the beliefs factor from the 'did not impact' group (group one) through the 'detracted greatly' group (group three). Respondents who indicated that observation of effects did not influence their quality of recreation (group one) had the highest level of agreement on the beliefs factor with a mean rank of 520.89. Respondents who indicated that observation of effects had 'detracted greatly' from their quality of recreation experience (group three) had the lowest level of agreement on the beliefs factor ($\bar{x}$ rank=199.13). For the management

factor, there was a trend of increasing level of agreement from the 'did not impact' group (group one) through the 'detracted greatly' group (group three). Respondents who stated that observation of effects did not influence their quality of recreation experience (group one) had the lowest level of agreement with the management factor ($\bar{x}$ rank=137.71). Respondents who indicated that observation of effects had 'detracted greatly' from their quality of recreation experience (group three) expressed the highest level of agreement with the management factor ($\bar{x}$ rank=376.72) (Appendix E – Table 13).

Kruskal-Wallis tests indicated significant differences between groups for both the beliefs and management factors ($p=\leq 0.0004$) (Appendix E – Table 13). Post hoc comparisons indicated significant differences ($p=<0.05$) between all three groups for both the beliefs and management factors.

Public Consultation

Only results significant at the p=0.05 level are reported below for Chi-square, Kruskal-Wallis and Mann-Whitney U comparisons. Results of the bivariate comparisons for past public consultation, past public consultation specifics, desirability of public consultation types, desired types of notification and desired types of feedback are presented in detail below. For a broader summary of the outcomes of the bivariate comparisons please see the following tables in Chapter Five: Table 5: Past Public Consultation by Type of User; Table 6: Desirability of Public Consultation Types by User Type; and Table 7: Desired Types of Notification.

Age

Past Public Consultation

There were no significant differences between age groups for past public consultation experience.

Past Public Consultation Specifics

There was a general trend of increasing levels of participation and increased age for the following types of public consultation: open house ($p=\leq 0.0004$), public meeting ($p=0.003$), written letter ($p=\leq 0.0004$), paper survey ($p=0.012$), phone survey ($p=0.026$), and advisory committee ($p=0.006$). With the exception of advisory committee, the 'sixty years and older' group had the highest percentage of participation for each type of public consultation. There were generally lower levels of participation across all age categories for three types of public consultation: paper survey, phone survey and advisory committee (Appendix E – Table 14.1).

Desirability of Public Consultation Types

Comparisons between age groups and desirability of public consultation types revealed significant differences for writing a letter ($p=\leq 0.0004$), attending meetings with decision-makers on the land ($p=0.039$), and completing online surveys ($p=\leq 0.0004$) (Appendix E – Table 14.2). Post hoc comparisons indicated that 30-39 year olds expressed a significantly lower desirability for writing letters than those respondents who were 40-49

years old, 50-59 years old, and 60 years and older. Forty to 49 year olds expressed a significantly lower desirability for attending meetings with decision-makers on the land than did those who were 50-59 years old and 60 and over years old. Younger age groups expressed higher levels of desirability for online surveys. Post hoc comparisons revealed a significant difference in desirability of surveys between respondents who were between 18-49 years old and those who were 60 years and older. A significant difference in level of desirability for online surveys also existed between respondents who were 18-29 years old and those who were 50-59 years old (Appendix E – Table 14.3).

Desired Types of Notification

Chi-square comparisons revealed a significant difference(s) between age groups for two types of public consultation notification: announcement on a local radio station ($p=0.003$) and notification on a government website ($p=0.006$) (Appendix E – Table 14.4). A higher percentage of younger respondents wished to be notified by an announcement on a local radio station with 70% of 18-29 year olds (78) desiring this type of notification. Less than half of respondents 60 years and older (65) indicated they would like to hear an announcement on a local radio station. Younger respondents also expressed higher levels of desirability for notification on a government website than did older respondents. Over half of 18-29 year olds (57) expressed a desire for notification on a government website, while only 31% of those 60 years and older (43) indicated they would like this type of notification.

Desired Types of Feedback

Analyses revealed a significant difference(s) between age groups for desirability of specific feedback (p=0.011) and feedback by media (p=0.024). Almost fifteen percent of 50-59 year old respondents (28) expressed a desire for specific feedback. Respondents in the 50-59 years old group also indicated an interest in feedback by media, with 11% of group members (21) mentioning this type of feedback (Appendix E – Table 14.5).

Membership

Past Public Consultation

A significantly higher number of respondents who were members of organized recreation use groups had participated in public consultation (294, 75%) than respondents who were not members (262, 62%) (p=≤0.0004) (Appendix E – Table 15.1).

Past Public Consultation Specifics

Analyses revealed that significantly more group members than non-members had participated in the following types of public consultation: open house (p=0.015), public meeting (p=0.001), written letter (p=≤0.0004), paper survey (p=≤0.0004), online survey (p=≤0.0004) and advisory committee (p=0.004) (Appendix E – Table 15.2).

Desirability of Public Consultation Types

Respondents who were members of organized recreation use groups expressed significantly higher desirability for attending open houses ($p=0.002$), public meetings ($p=0.002$), meetings with decision-makers ($p=\leq 0.0004$) and meetings with decision-makers on the land ($p=0.008$) than did non-members (Appendix E – Table 15.3).

Desired Types of Notification

A slightly higher proportion of group members (217, 56%) indicated they would like to hear an announcement on a local radio station than did non-members (201, 48%) ($p=0.021$) (Appendix E – Table 15.4).

Desired Types of Feedback

A higher proportion of group members indicated they would like to receive feedback by mail (60, 15%) than did non-members (44, 10%) ($p=0.034$), and by club communication (16, 4%) than did non-members (5, 1%) ($p=0.009$). A higher proportion of non-members (34, 8%) indicated they would like feedback by media than did group members (16, 4%) ($p=0.02$), however only a small proportion of both non-members and members indicated that they desire feedback by the media (Appendix E – Table 15.5).

Motorized

Past Public Consultation

A significantly higher percentage of respondents who were motorized users (281, 72%) had participated in past public consultation compared to non-motorized users (354, 64%) (p=0.01) (Appendix E – Table 16.1).

Past Public Consultation Specifics

Analyses indicated that there were significant differences between motorized and non-motorized users for the following types of past public consultation: public meeting (p=0.011), paper survey (p=0.001) and online survey (p=≤0.0004) (Appendix E – Table 16.2). A higher percentage of motorized users had experience with these three types of public consultation than had non-motorized users.

Desirability of Public Consultation Types

Non-motorized users expressed a significantly higher level of desirability for writing a letter ($\bar{x}$ rank= 414.42) than did motorized users ($\bar{x}$ rank=382.79) (p=0.047). However, motorized users expressed a significantly higher level of desirability for completing phone surveys ($\bar{x}$ rank=420.2) than did non-motorized users (385.1) (p=0.029) (Appendix E – Table 16.3).

Desired Types of Notification

Motorized users expressed significantly higher levels of preference than did non-motorized users for all four types of notification for public consultation: local newspaper ($p=0.021$), local radio station ($p=\leq 0.0004$), local TV station ($p=\leq 0.0004$) and government website ($p=0.028$) (Appendix E – Table 16.4).

Desired Types of Feedback

A higher proportion of non-motorized users (55, 10%) expressed a desire for specific feedback following public consultation compared to motorized users (23, 6%) ($p=0.026$). Slightly higher percentages of motorized users indicated a desire for: feedback by mail (59, 15%) compared to non-motorized users (55, 10%) ($p=0.016$); and feedback by telephone (20, 5%) compared to non-motorized users (11, 2%) ($p=0.008$) (Appendix E – Table 16.5).

Gender

Past Public Consultation & Past Public Consultation Specifics

There was no significant difference between the genders on previous public consultation experience. However, analysis indicated that a significantly higher percentage of male respondents (351, 54%) had completed an online survey than had female respondents (71, 44%) ($p=0.023$) (Appendix E – Table 17.1).

Desirability of Public Consultation Types

There were no significant differences in desirability for types of public consultation between genders. Gender was the only variable that did not result in significant differences for desirability of public consultation types.

Desired Types of Notification

A significant difference existed between genders for desired notification about public consultation (Appendix E – Table 17.2). A higher percentage of men (327, 50%) indicated they would like to see an advertisement on a local television station than did women (61, 38%) ($p=0.004$).

Desired Types of Feedback

Significant differences in desired types of feedback following consultation existed between males and females. A larger percentage of female respondents (28, 17%) indicated they would like to receive feedback by internet than did male respondents (66, 10%) ($p=0.011$). A higher proportion of female respondents (23, 14%) indicated they would like to receive feedback by media than did male respondents (32, 5%) ($p=<0.001$) (Appendix E – Table 17.3).

Tenure

Past Public Consultation

Analyses indicated a significant difference(s) between tenure groups for past public consultation (p=0.002). At least half of all respondents in each of the tenure groups had participated in past public consultation. Those respondents with tenure of six or more years had the highest levels of participation. Sixty eight percent (83) of the '6 to ten years' tenure group, 73% (117) of the '11 to 20 years' tenure group, and 73% (272) of the 'more than 21 years' tenure group had participated in past public consultation (Appendix E – Table 18.1).

Past Public Consultation Specifics

There was a general trend of increasing levels of past involvement as tenure increased for a number of public consultation activities including: open house (p=≤0.0004), public meeting (p=≤0.0004), written letter (p=≤0.0004), paper survey (p=≤0.0004), online survey (p=0.009), and advisory committee (p=0.004) (Appendix E – Table 18.2). Open house, written letter, and online survey had increasing levels of participation as tenure increased. There were a few deviations from this increasing participation/increased tenure trend for public meeting, paper survey and advisory committee, but the '21 years and over' group consistently had the highest level of past participation for these types of public consultation.

Desirability of Public Consultation Types

There were significant differences in desirability of public consultation types between tenure groups. Significant differences existed for the desirability of the following types of public consultation: writing a letter (p=0.017), attending meetings with decision-makers (p=0.024), and completing online surveys (p=0.005) (Appendix E – Table 18.3). Post hoc comparisons revealed that respondents with three to five years tenure expressed a significantly lower desirability for writing a letter than those who had been recreating in the study area for over 21 years (p=0.015). Respondents with one to two years tenure indicated a significantly lower desirability for attending meetings with decision-makers than did those with over 21 years tenure (p=0.045). Level of desirability for completing online surveys was significantly lower for those with more than 21 years tenure compared to those with three to five (p=0.02), six to 10 (p=0.035) and 11-20 years tenure (p=0.045) (Appendix E – Table 18.4).

Desired Types of Notification

Analyses indicated a significant difference(s) existed between tenure groups for 'notification in local newspaper' (p=0.022). Only 44% of respondents (21) with one to two years tenure indicated they would like to read a notice in a local newspaper. All other tenure categories had at least 57% of their respondents expressing that they would like to read a notice in a local newspaper (Appendix E – Table 18.5).

Desired Types of Feedback

Chi-square tests indicated a significant difference(s) existed between tenure groups for 'feedback by email' ($p=0.039$). Only 10% of respondents with less than one year's tenure (2) expressed a desire to receive feedback via email following consultation. Within all other tenure groups, at least 42% of respondents expressed a desire to receive feedback via email following consultation (Appendix E – Table 18.6).

Residence

Past Public Consultation

Analysis indicated that respondents from communities not including Calgary and Edmonton (referred to as 'other' communities) had significantly higher participation rates in past public consultation with as many as 70% of these respondents (315) participating in past public consultation. Fifty nine percent of respondents from Calgary and Edmonton (or 'large city' respondents) (186) had participated in past public consultation ($p=0.001$) (Appendix E – Table 19.1).

Past Public Consultation Specifics

Respondents from 'other' communities had significantly higher participation rates in a number of types of public consultation. These types included: open house ($p=0.042$); public meeting ($p=\leq 0.0004$); online survey ($p=0.016$); and advisory committee ($p=0.001$) (Appendix E – Table 19.2).

Desirability of Public Consultation Types

Respondents from 'other' communities expressed significantly higher levels of desirability for certain types of public consultation. These types of public consultation included: attending public meetings ($p=\leq 0.0004$), attending meetings with decision-makers on the land ($p=0.018$) and completing paper surveys ($p=0.011$) (Appendix E – Table 19.3).

Desired Types of Notification

Chi-square tests revealed a significant difference for 'notification in local newspaper' between groups ($p=\leq 0.0004$). A higher proportion of respondents from 'other' communities indicated that they would like to read a notice in a local newspaper (78%, 353) than did 'large city' respondents (58%, 184) (Appendix E – Table 19.4).

Desired Types of Feedback

Chi-square tests revealed a significant difference for 'feedback by mail' ($p=0.01$). A higher percentage of respondents from 'other' communities expressed that they would like to receive feedback by mail (17%, 77) than did 'large city' respondents (10%, 33) (Appendix E – Table 19.5).

Recreation Quality Change

Past Public Consultation

Chi-square tests indicated a significant difference(s) existed between groups for past public consultation ($p=\leq 0.0004$). Respondents who had experienced a 'decrease/decline' in the quality of their recreation experience had the highest levels of participation in past public consultation. Seventy five percent (322) of respondents whose recreation quality had 'decreased/declined' participated in past public consultation compared to 65% of respondents (75) whose recreation quality had 'increased/improved' and 56% of respondents (139) whose recreation quality had 'remained the same/unchanged' (Appendix E – Table 20.1).

Past Public Consultation Specifics

Significant differences existed between 'change in recreation quality' groups for the following types of past public consultation: open house, public meeting, written letter, paper survey, online survey and advisory committee ($p=\leq 0.0004$ for each type of public consultation). With the exception of public meeting, respondents whose experience had 'decreased/declined' had the highest percentage participation, followed by respondents whose experience had 'increased/improved'. Respondents who felt that their experience had 'remained the same/unchanged' had participation levels that were consistently slightly lower than those respondents in the 'increased/improved' group (Appendix E – Table 20.2).

Desirability of Public Consultation Types

Kruskal-Wallis tests revealed that a significant difference(s) existed between the groups for attending meetings with decision makers (p=0.021), attending meetings with decision-makers on the land (p=0.001) and completing online surveys (p=0.001). There was a trend of increasing desirability for attending meetings with decision-makers and attending meetings with decision-makers on the land as the 'change in recreation quality' groups moved from 'increased/improved' through to 'decreased/declined'. Respondents who stated that their recreation experience had 'decreased/declined' expressed the highest level of desirability for attending meetings with decision-makers ($\overline{x}$ rank=388.41) and attending meetings with decision-makers on the land ($\overline{x}$ rank=390.94). An anomaly in this trend was that those who stated their recreation quality had 'increased/improved' expressed a higher desirability for attending meetings with decision-makers on the land ($\overline{x}$ rank=340.37) than did respondents whose experience had 'remained the same/unchanged' ($\overline{x}$ rank=330.52). Respondents whose experience 'remained the same/unchanged' expressed the highest level of desirability for online surveys ($\overline{x}$ rank=404.46), followed closely by those who felt their experience had 'increased/improved' ($\overline{x}$ rank=399.12) (Appendix E – Table 20.3).

Post hoc comparisons indicated that significant differences on desirability for attending meetings with decision-makers on the land existed between respondents whose recreation experience had 'decreased/declined' and those respondents whose recreation experience had 'increased/improved' (p=0.028) or 'remained the same/unchanged' (p=≤0.0016).

Significant differences on desirability for completing online surveys existed between respondents whose recreation experience had ‘decreased/declined’ and those respondents whose recreation experience had ‘increased/improved’ ($p=0.03$) or ‘remained the same/unchanged’ ($p=\leq 0.0016$). Additionally, a significant difference on level of desirability for attending meetings with decision-makers existed between respondents whose recreation experience had ‘decreased/declined’ and respondents who stated that their recreation experience had ‘increased/improved’ ($p=0.02$)(Appendix E – Table 20.4).

Observation of Effects/Influence on Recreation Experience

Past Public Consultation

A significant difference(s) in past public consultation experience existed between respondents who observed recreation effects on the landscape and experienced differing resultant change in the quality of their recreation experience – from ‘did not affect’, to ‘detracted somewhat’, to ‘detracted greatly’($p=0.003$). Respondents who felt that effects ‘detracted greatly’ from their recreation experience had the highest percentage of respondents who had participated in past public consultation, with 77% of this category’s respondents participating in past public consultation (Appendix E – Table 21.1).

Past Public Consultation Specifics

Significant differences existed for the following types of past public consultation between groups: open house (p=0.018); public meeting (p=0.001); written letter (p=0.001); online survey (p=0.038); phone survey (p=0.03); and advisory committee (p=0.007). The highest percentage of participation for each of these types of public consultation was owing to respondents who felt that observed effects 'detracted greatly' from their experience. Respondents who felt that observed effects did not influence their quality of recreation had a slightly higher rate of participation in these types of public consultation than did those respondents who felt that the observation of effects 'detracted somewhat' from their recreation experience (Appendix E – Table 21.2).

Desirability of Public Consultation Types

Respondents who stated that observed effects 'detracted greatly' from their recreation experience expressed a significantly higher desirability for attending meetings with decision-makers on the land than the other two groups (p=0.002) (Appendix E – Table 21.3). Post hoc comparisons (Appendix E – Table 21.4) revealed that significant differences existed between those who stated that observed effects 'detracted greatly' from their recreation experience and both of the other categories – respondents who felt that observed effects 'did not affect' their recreation experience (p=0.02) or 'detracted somewhat' from their recreation experience (p=0.002).

CHAPTER FIVE: DISCUSSION

> The basic fact that land resources are *public* sets the stage for multiple perspectives, which in turn generates a set of conflicting values and intentions that, when left unresolved, are capable of further damaging the natural well-being of forests, watersheds, rangelands, and nearby communities caught in a disunifying tidal wave (Burns 2001, p. 273).

Access management can be viewed as a 'wicked problem' or 'messy situation'. McCool and Guthrie (2001) suggested that in messy situations, emphasis must be placed on learning and consensus building. Propst (2005) states:

> We need more emphasis on dialogue among the unlike. When people who have different life histories, different priorities and different values, sit down together, treating each other with respect, surprising solutions often emerge. Increased creativity can produce results that are often more effective, enduring, and equitable than when acting in isolation. The synergy can generate options that were never considered before, placing them on the table for discussion and analysis (p. 18).

It is within the context of finding and focusing on areas of agreement, developing joint understanding through shared perspectives, and dialogue among the unlike that the following discussion of the research results was couched. The discussion begins with general findings on both access management statements and public consultation. Then, it focuses on the similarities and differences between types of recreation users with regard to access management and public consultation. Specific recommendations about public consultation for access management are included in Chapter 6 - Recommendations and Conclusion. Although many interesting and useful observations can be made with this research project, the findings presented in this chapter are the most important ones.

Response Rate

The high survey response of 945 respondents could have been due to a number of possible factors. First, one potential explanation is that people are very passionate about this area of public lands, and they wished to express their views and concerns about it. Subsequent to this, is the potential feeling that there is "something at risk": respondents may have perceived that if they did not participate in the survey, then their voices may not be considered in future decisions about access management. Another possible reason for a high response rate was the use of the Internet (email messages, website notices and online discussion forums) to promote the survey. Many researchers (i.e.,Coleman and Gotze 2001; Organization for Economic Co-operation and Development (OECD) 2001a) have highlighted the increasing role that the internet will play in public consultation now and into the future. Anecdotally speaking, it seemed that a large amount of promotion for the survey happened through organized recreation use groups' online discussion forums. According to Davis(2005), internet discussion forums have suddenly developed into the subject of widespread public interest. They have become known as the "new water coolers, where common people can air their gripes" (Davis 2005, p. ix).

Tenure

Almost half of the respondents have been recreating on public lands in southwestern Alberta for over twenty-one years. These respondents provided valuable input because of their long tenure on public lands, potentially providing a very different perspective than a new user of the area. Respondents with a longer tenure likely had a very different

baseline for recreation quality and observed effects/influence on recreation quality compared to recent recreation users of the study area. St. Arnaud (2004) noted that long time users may be potential stewards of the area and may support management actions that protect the area and improve recreation experiences. However, long time users may also be resistant to changes in management and changes in the way that they may use the area (St. Arnaud 2004).

Access Management Statements

The results discussed below could indicate areas of agreement, or common ground, shared between the many types of users who responded to this survey. Several trends were evident for the access management statements. Table 2 captures the descriptive statistics for each statement, and whether most respondents disagreed or agreed with a statement or if the respondents were polarized. In considering the management implications of these findings, statements where a high level of agreement or disagreement is shared by a majority of respondents could represent views or beliefs that stakeholders shared in common. These views or beliefs may be used as a foundation upon which to build public consultation efforts by providing a starting point for access management planning. For instance, over half of respondents indicated that their recreation experience has decreased/declined.

Similarly, in their survey of Crowsnest Forest users, when Alberta Sustainable Resource Development asked respondents if they had 'noticed any changes in the Crowsnest Forest in the past five years that [they did] not like' two thirds of respondents answered 'yes'

(2005). Support for an access management planning process could be generated through identifying that involvement in the process could address the decrease/decline in one's recreation experience.

Areas of agreement on the access management statements are critical to consider in the design of an access management process. Most respondents agreed on some level that: there is a need for certain types of infrastructure; there is a need to determine what recreation activities are allowed to occur and where they are allowed to occur; there is a need to separate incompatible recreation uses; and there is a need for a formal access management plan. The high levels of agreement with these statements could indicate a shared understanding across user types that access management planning could address some of their concerns, providing a basis upon which to build public consultation for access management planning.

Eighty four percent of all respondents strongly agreed that 'it is important to maintain recreation opportunities for future generations.' In the 2000 National Survey on Recreation and the Environment in the United States, 85% of respondents indicated that it was extremely important or very important 'knowing that future generations will have wilderness areas' (USDA Forest Service and National Oceanic and Atmospheric Administration 2002). In the same survey, 84% of respondents stated that they strongly agree that they 'enjoy knowing that future generations will be able to visit and experience wilderness areas' (USDA Forest Service and National Oceanic and Atmospheric Administration 2002). The aforementioned high levels of agreement with the 'future generations' statement expressed by survey respondents could be used as a starting point

for crafting a shared vision for this landscape that could shape the access management process.

Although there were polarized views between respondents on the number of rules, regulations and fines, a majority of respondents expressed a high level of disagreement that there is sufficient enforcement of existing rules. Given that contemporary access management is characterized by desultory enforcement of legislation (Epp 2003), access management planning should address the lack of enforcement on public lands as this is an area of concern for most respondents. Many focus group participants stated that "we don't need more rules, but we need to enforce existing rules." Similarly, the Praxis Group's park user survey for Alberta's Provincial Parks found that 54% of respondents felt that future investment should be directed toward 'enforcement of rules and regulations' in Provincial Parks (The Praxis Group 2008).

Respondents had polarized views on the statement 'it is important to keep public lands open for all types of recreation uses.' Consequently, access management planning efforts should not be framed within the context of some uses being preferable, or allowable, compared to others. Such an approach could alienate certain user groups and undermine an access management planning process from its early stages. Successful approaches to access management bring all affected stakeholders to the table (US Institute for Environmental Conflict Resolution and the Morris K. Udall Foundation 2005).

Respondents had polarized views on the statement 'overall recreation users demonstrate responsible use of public lands.' Additionally, respondents had polarized views on the

statement: 'the current level of impacts from recreation on public lands in southwestern Alberta is acceptable.' These results could indicate that respondents have different views of what constitutes 'responsible use' and an 'impact from recreation'. These polarized results could bolster the need for continued and increased education initiatives about recreating responsibly on public lands. Eighty-one percent of respondents indicated that they agreed (somewhat agreed to strongly agreed) that 'education is the best way to encourage responsible use of public lands.' Education objectives were described as being paramount by stakeholders in the Wenatchee National Forest Off-Road Vehicle Trails case study (Fitzhenry and Chavez 2005).

The high level of disagreement with the statement 'the current level of impacts from industrial activities, such as logging and oil and gas development, is acceptable' was aligned with views that were expressed by several focus group participants. Some focus group participants stated that if their recreation use will be regulated for environmental damage then industry should be subjected to the same level of scrutiny.

In most regions of the United States, traditional forms of resource use on public lands- such as grazing and logging- are being replaced by outdoor recreation activities, most of which present a new set of resource and social effects on both the land and nearby communities (Burns 2001). Given that a similar transition is happening in Alberta, perhaps the high level of disagreement with the survey statement on acceptability of current industrial effects was a reflection of this transition.

The concerns expressed by some recreation users about both recreation and industrial effects on public lands in southwestern Alberta suggest the opportunity to address both recreation and industrial effects concurrently. The South Saskatchewan Regional Plan for the Land-use Framework may provide guidance on how to address recreational, industrial and other effects on the landscape.

Statements where views were polarized between respondents may indicate more contentious topics. These topics should be addressed later in the access management planning process after a sense of trust and a shared common vision have been established, and when the process has achieved some initial successes.

Table 2: Summary of Trends for Access Management Statements

Disagree	Polarized	Agree
		Change in quality of experience – 54% (428) of respondents indicated their recreation experience has decreased/declined, while only 15% (115) specified that their recreation experience has improved
		Random camping is an important part of the overall quality of my experience on public lands - over half of respondents (430, 57%) agreed or strongly agreed; eighteen percent of respondents (172) strongly disagreed or disagreed
	It is important to keep public lands open for all types of recreation uses - 36% of respondents (283) stated they strongly agree with the statement, while 15% of respondents (118) strongly disagreed with the statement	
		It is important to maintain recreation opportunities for future generations - 84% (647) indicated they strongly agree
		Recreation use on public lands in southwestern Alberta is increasing - 83% of respondents (608) agreed/strongly agreed
	Overall, recreation users demonstrate responsible use of public lands - responses were spread evenly between the 'disagree' through 'agree' categories. Just under a quarter of respondents (183, 23.5%) indicated they somewhat agree with this statement	
		Education is the best way to encourage responsible use of public lands - 81% of respondents (622) stated that they somewhat agree/agree/strongly agree
	There are enough rules, regulations and fines to guide responsible use of public lands – 18% percent of respondents (133) both strongly disagreed and agreed with this statement	

Disagree	Polarized	Agree
There is enough enforcement to encourage responsible use of public lands - 73% of respondents (560) somewhat disagreed to strongly disagreed		
		There is a need for staging areas, and bathroom and garbage facilities on public lands in southwestern Alberta - eighty four percent of respondents (645) somewhat agreed to strongly agreed
		There is a need to determine what recreation activities are allowed to occur, and where they are allowed to occur, on public lands in southwestern Alberta - eighty four percent of respondents (644) agreed (somewhat agreed to strongly agreed); only 12% of respondents (91) somewhat disagreed to disagreed
		There is a need to separate recreation uses that may be incompatible on public lands in southwestern Alberta - Three quarters of respondents (567) indicated they somewhat agree to strongly agree
		There is a need for a formal access management plan for public lands in southwestern Alberta - 78% of respondents (590) stated they 'somewhat agree' through 'strongly agree'
	The current level of impacts from recreation on public lands in southwestern Alberta is acceptable - just over half of respondents (412, 55%) disagreed on some level	
The current level of impacts from industrial activities, such as logging and oil and gas development, is acceptable - sixty seven percent of respondents (499) disagreed on some level		

Public Consultation

Almost seventy percent of respondents had participated in some type of public consultation for land-use. More respondents had experience with attending an open house, attending a public meeting, and writing a letter.

In general, people would like to be consulted through completing an online survey or engaging in person (Table 3). A majority expressed a 'neutral' desirability for writing a letter, and that the following types of public consultation were 'more desirable': attending an open house, attending a public meeting, attending a meeting with decision-makers, and completing an online survey. As a comparison, the Praxis Group (2008) found that email and telephone, followed by mail ranked highest in terms of desired consultation methods in their telephone survey on Alberta's Provincial Parks users. However, when park users were asked to describe the best way to obtain their input on the future of provincial parks through an online survey, email once again ranked the highest, followed by surveys and Internet/website (The Praxis Group 2008).

Through their case study work on collaboration, Wondolleck and Yaffee (2000) found that direct face-to-face interaction between decision-making authorities and stakeholders was critical:

> [T]he most successful collaborative efforts fostered two-way, interactive flows of information, and decision making occurred through an open, interactive process rather than behind closed agency doors. Such efforts actively involved people throughout a planning or problem-solving process so that they learned together, understood constraints, and developed creative ideas, trust, and relationships. Direct face-to-face interaction between stakeholders and decision-makers was critical (p. 105).

The benefit from face-to-face interactions can flow between land managers and members of the public as documented in a case study of OHV use and forest plan revision for the Ouachita National Forest in the United States. Forest Service staff found tremendous value in interacting with the public citing, "the new insights, relationships, on-the-ground information, sense of passion and commitment, and the (surprising, to some) awareness of shared values and interests with the OHV community" (Fisher and Bond 2005, p. 60). In this same case study, members of the public identified that prior to attending the events around the forest plan revision, they had never had direct contact with a Forest Service employee and would describe staff as knowledgeable and courteous (Fisher and Bond 2005).

The 'most desirable' type of public consultation selected by most respondents was meeting with decision-makers on the land. Meeting with decision-makers on the land was also suggested by some focus group participants as a type of public consultation that they would most prefer. This could be a resource-intensive type of public consultation, but one that may engage participants and decision-makers in a new way and generate interesting results. Field trips are an effective way for citizens and scientists to interact "on the ground" (Walker and Daniels 2001). Referring to a number of successful collaborative processes, Wondolleck and Yaffee (2000) state that "strong identification with a geographic location ... has provided the foundation on which the cooperative effort was built" (p. 73). Meeting with decision-makers on the land could be a potent vehicle for envisioning a shared future for the landscape. "By focusing on a landscape, people can move through the barriers to collaborative approaches…" (Propst 2005, p. 19).

Table 3: Desirability of Public Consultation Types Expressed by a Majority

Neutral	More Desirable	Most Desirable
Writing a letter – 34%	Attending an open house -45%	Meeting with decision-makers on the land – 37%
Completing a paper survey – 35%	Attending a public meeting – 49%	
Completing a phone survey – 25%	Attending a meeting with decision-makers – 41%	
	Completing an online survey – 44%	

Desired Types of Feedback

Less than one percent (6) of respondents indicated that they would not like to receive feedback following public consultation. This finding could indicate that most respondents wish to receive some sort of feedback following public consultation. However, only 626 respondents answered this question which may be owing to the fact that it was an open-ended question. A close-ended question may have resulted in more definitive trends on the desirability of different types of feedback.

The literature indicates that feedback is a critical step in access management planning. Land managers need to show the correlation between stakeholder input and the end product, as stakeholders need to see that their advice has been taken seriously (Eos Research & Consulting Ltd. 2009). McCool and Guthrie (2001) identified one measure of public participation success as responsibility (in the sense of ownership) – seeing input reflected in a document or decision and feeling like issues and concerns were accepted and considered.

Convergence & Divergence – User Types

> Strategies for addressing unmanaged recreation that focus on measuring public consensus, opinions, or votes in the form of the aggregate attitude of the majority are insufficient because interest group polarization at national and regional scales has created an intractable "us against them" controversy over outdoor recreation (Brooks and Champ 2006, p. 795).

The results of the user group comparisons from this research project can provide an understanding of where similarities and differences exist between types of users, as opposed to simply analyzing the aggregate attitude of the majority. The information gained through this research project could be essential in designing an access management planning process that considers different types of users and how to best involve them in the planning process. The assumption is that if recreation users are effectively involved in creating an access management plan, they will be more compliant with, and supportive of, the plan. "Decisions that engage people's values and interests broadly ... are most appropriately addressed through decision processes that bring those values and interests to the fore" (Beierle and Cayford 2002, p. 75).

Factor Analysis

Comparisons demonstrated that significant differences existed between user groups on level of agreement with the beliefs and management factors (Table 4). User group comparisons included the following: age, organized recreation use group members/non-members, motorized/non-motorized users, place of residence (large city vs. other communities), gender, tenure, change in recreation quality, and observation of effects from recreation/influence on recreation quality. Some user groups had higher levels of

agreement with the management factor, indicating that they may be more amenable to access management planning. These types of users may be more supportive of access management planning from the onset.

Older age categories had different beliefs about access management (beliefs factor) and views on specific access management decisions (management) than the younger age categories. This result could be owing to the fact that older respondents may have had a larger time window to view change on the landscape and have a higher level of support for management as a result of the changes that they have seen over time.

Non-motorized users had higher levels of agreement with the management factor and lower levels of agreement with the beliefs factor, while motorized users had lower levels of agreement with the management factor and higher levels of agreement with the beliefs factor. Non-motorized users experience more conflict than motorized users (Jackson and Wong 1982). According to Eos Research & Consulting Ltd. (2009) a significant proportion of conflicts in southern Alberta's Forest Land Use Zones relate to non-motorized users' concerns for wilderness values, noise levels and other aesthetic effects of motorized traffic. After concerns for aesthetics, some proportion of conflict is due to incompatibility of many motorized and non-motorized recreation uses of public lands in southern Alberta (Eos Research & Consulting Ltd. 2009).

Findings from a survey of OHV users in North Carolina suggested that even when riders are satisfied with OHV opportunities they do not want their use restricted, and there appeared to be little support for increasing regulations, user fees or government

involvement (Flood 2005). In her study of recreation users of the Livingstone River Valley- which was encompassed by this project's study area- St. Arnaud (2004) found that many OHV users in the area were concerned about their ongoing ability to use similar areas in a free and unrestricted fashion. The results of her study showed that OHV users were generally less supportive of management in the area, and she hypothesized that "OHV users feel defensive about being managed and losing opportunities to recreate in their preferred activity" (St. Arnaud 2004, p. 104).

One surprising result was the lack of significant differences in the residence variable (large city vs. other communities). The residence variable was the only variable that did not result in any significant differences in the beliefs and management factors. This was an interesting result as many focus group participants discussed the major differences between urban and rural recreation users with regard to general beliefs about access management (beliefs factor) and views on specific access management decisions (management). Dwyer and Childs (2004) state that because of the changing distribution of people across the landscape, "The differences between what has traditionally been considered urban and rural are tending to blur over time" (p. 154). Nonetheless, physical features, local regulations, and social practices remain sufficiently different in rural and urbanized areas to warrant comparison (O'Neill 2005). Speaking about the rural and urban dimensions of watershed planning, O'Neill (2005) stated that "planning occurs against a history of conservation coloured by conflict between rural residents and the planners whom residents perceive as outsiders" (p. 250).

Results of this study could indicate that an urban/rural rift does not exist for the recreation users in the study area. Acknowledging this lack of difference could be used to build trust during the early stages of public consultation between recreation users from different communities. However, the coding of respondents into 'large city' and 'other communities' categories may have resulted in a lack of significant differences as large communities such as Lethbridge or Sherwood Park were included in the 'other communities' category. Also, interpretation of these results is dependent on how a person perceives urban and rural communities. A Lethbridge resident may define themselves as being rural owing to the smaller size of that city compared to Calgary, while a resident from the M.D. of Willow Creek may consider a citizen of Pincher Creek as urban. Such varied perceptions of urban versus rural made it challenging to decide where to draw the arbitrary boundary between urban and rural for the purposes of this study.

Significant differences for tenure and the management factor existed between group five and groups three and six. These results could reflect that respondents in tenure group five (six to 20 years tenure) have spent a sizeable amount of time on the landscape and anticipate spending more time on the landscape resulting in a higher level of agreement with the management factor through a desire for infrastructure and access management planning. Meanwhile, it is possible that those with the lowest number of years tenure (group three) may not have experienced enough change to warrant increased levels of agreement with the management factor, and that those with the most tenure (group six) may be spending less time on the landscape, or do not wish to change their ways, or both.

Significant differences for ‘change in recreation quality’ and the beliefs factor existed between the ‘decreased/diminished’ group and both the ‘increased/improved’ group and the ‘same/unchanged’ group. This result could reflect that those respondents who have experienced a decreased/diminished quality of recreation experience over time have developed different perceptions about what is currently happening on the landscape and general beliefs about access management (beliefs factor) than those whose experience has increased/improved or remained the same/unchanged. The ‘decreased/diminished’ group was significantly different from both the ‘increased/improved’ group and the ‘same/unchanged’ group on the management factor. This result could indicate that those who have experienced a negative change in their quality of recreation will be more in favour of infrastructure and specific access management planning.

Significant differences existed between all three groups for ‘effects/influence on recreation quality’ on both the beliefs and management factors. This could be a logical outcome for the beliefs factor as respondents’ perceptions about what is currently happening on the landscape in the study area and general views towards access management could strongly shape their perception of a recreation effect, and resulting changes to quality of recreation experience as a result of observed recreation effects.

The results for the management factor could also be a logical outcome given that support for specific access management actions could be linked to how the observation of recreation effects influences the quality of one’s recreation experience: the more that effects influence one’s recreation experience, the more one may be in favour of management actions to address those effects. Conversely, if the observation of effects

does not influence respondents' quality of recreation they may be less likely to support management actions.

Table 4: Trends for Beliefs and Management Factors by User Types

Variable	Higher level of agreement with beliefs/lower level of agreement with management	No significant differences	Lower level of agreement with beliefs/higher level of agreement with management	Significant differences, but no clear trend
Age	Younger age groups		Older age groups	
Membership	Group members		Non-members	
Motorized	Motorized users		Non-motorized users	
Residence		Large city/Other communities		
Gender	Males		Females	
Tenure				Groups 3-6
Change in recreation quality*	Increased/improved Same/unchanged		Decreased/diminished	
Effects/influence	Did not impact		Detracted greatly	

*Trends are not as definite

Convergence & Divergence – Types of Users and Public Participation

Group members, motorized users, respondents with six or more years tenure, respondents from 'other communities', respondents who felt that their recreation experience had 'decreased/declined' and respondents who had observed recreation effects that had detracted greatly from their recreation experience had higher rates of past public consultation (Table 5). Some of these trends make sense (e.g., older respondents had higher participation rates owing to a potentially larger window for engaging in public

consultation), while others require further exploration. For example, why do respondents from a 'large city' have lower rates of past experience with public consultation?

Group members had higher rates of past public consultation experience than did non-group members. It is possible that if one is sufficiently interested and engaged to belong to a group, one might also participate in public processes. These results could also indicate that belonging to an organized recreation use group may encourage or enable respondents to take part in public consultation. Perhaps groups keep members informed about upcoming public consultations through club communication materials (e.g., group website, newsletters, meetings, etc.). Groups may enable members to feel better equipped to contribute to public consultation by providing members with background information on the issues and, in some cases, speaking points on the issues. Comparative studies of environmental groups in both Canada and the United States demonstrated that these groups play the central role in interpreting and making technical environmental information available to citizens (Pierce, Steger et al. 1992).

Evidence suggests that accessing membership groups is an effective way to undertake consultation, since effort is focused on those most willing to be involved, most likely to have the required knowledge and most able to work within the [government] authority's culture and discourse (Downs 1997). In an extensive study, Jaenicke (1996) demonstrated that the capacity for interest group participation across the United States plays as great a role- or even greater- in advancing environmental policy as government institutional arrangements.

However, some authors question the role of organized groups. The findings of Ravenscroft, Curry and Markwell (2002) indicate that membership is often defined according to the mailing list, with the strength and direction of the group being very much a function of the interests and energy of those currently involved. Fisher (2000) acknowledges that interest groups are important, but they should not be confused with citizen participation: "Although interest groups represent citizens ... they are themselves hierarchical organizations frequently quite removed from the citizens for whom they speak" (p. 113).

Motorized users had higher rates of past public consultation experience than did non-motorized users. Motorized users may have been more involved in past public consultation owing to a perception that they need to uphold motorized recreation use on public land as discussed above.

At least half of all respondents in each of the tenure categories had participated in past public consultation. Those respondents with tenure of six or more years had the highest levels of participation. This could be a logical outcome as those who have been recreating for longer periods of time may have had more opportunities to become involved in public consultation.

Respondents from 'other communities' had higher rates of past participation in public consultation than those from 'large cities'. This may be attributed to increased awareness of public consultation opportunities through social networks in communities smaller than

large cities. It would be interesting to explore how online social networks may play a role in changing this dynamic now, and into the future.

Respondents who had experienced a 'decrease/decline' in the quality of their recreation experience had the highest level of participation in past public consultation. It was not surprising that those who felt their recreation experience had increased/improved had the next highest level of participation. These respondents may have had high rates of participation in order to advocate for continued improvements to their experience.

Respondents who had observed recreation effects that resulted in a change to their quality of recreation experience had the highest level of participation in past public consultation. Again, this type of user may have had higher rates of past public consultation in order to address their concerns about the effects that they observed and how these effects influenced their recreation quality.

Table 5: Past Public Consultation by Type of User

Variable	General Trend	Specifics
Age	No significant differences between age groups	
Membership	Group members had higher rates of participation than non-group members	75% (294) of members of organized recreation use groups had participated; 62% (262) of non-members had participated
Motorized	Motorized users had higher rates of participation than non-motorized users	A significantly higher percentage of respondents who were motorized users (281, 72%) have participated in past public consultation than have non-motorized users (354, 64%)
Gender	No significant differences between males and females	
Tenure	Higher levels of past participation occurred for respondents with tenure of six or more years	At least half of all respondents in each of the tenure categories had participated in past public consultation
Residence	Respondents from 'other' communities had higher participation rates	70% of respondents from 'other communities' participated in past public consultation; fifty nine percent of respondents from Calgary and Edmonton had participated in past public consultation
Change in Recreation Quality	Respondents who had experienced a decrease/decline in the quality of their recreation experience had the highest level of participation in past public consultation	
Effects/Influence	Respondents who felt that effects detracted greatly from their recreation experience had the highest percentage of respondents who had participated in past public consultation	77% of the 'detracted greatly' category's respondents participated in past public consultation

Desirability of Public Consultation Types

Respondents who were members of organized recreation use groups expressed significantly higher levels of desirability for attending open houses, public meetings, meetings with decision-makers and meetings with decision-makers on the land than did non-members (Table 6). These results could indicate that group members had a higher level of desirability for types of public consultation in which they are able to listen to

others and to verbally express themselves and their interests. In their study of stakeholder involvement in shaping a black bear management plan, Lafon and others (2004) found that active participation (e.g., discussion within a group) had a greater effect than passive involvement (e.g., reading, hearing a lecture) on influencing stakeholders' knowledge and opinions concerning black bears and their management.

There were no significant differences in desirability for types of public consultation between genders. Gender was the only variable that did not have significant differences on desirability for types of public consultation.

Respondents with three to five years tenure had a significantly lower desirability for writing a letter than those who had been recreating for over 21 years. Respondents with one to two years tenure had a significantly lower desirability for attending meetings with decision-makers than did those with over 21 years tenure. These results could reflect the potential that those with a shorter tenure may not feel as aware of what has happened on the landscape in the past, and is currently happening on the landscape- compared to those who have spent more years recreating there- resulting in a lower desirability for writing to, or meeting with, decision-makers.

Desirability for completing online surveys was significantly lower for those with more than 21 years tenure when compared to those with three to five, six to 10 and 11 to 20 years tenure. Respondents with more than 21 years tenure may find online surveys restrictive to the level of detail that they wish to express in public consultation. Another possibility could be that this tenure cohort may have had less access to, or be less

comfortable using, the Internet. Given that longer tenures may be correlated to older age, it is possible that age played a role in this result. Gartland (2004) argues that age is one of the more visible divisions associated with 'the digital divide'. The digital divide is a term used to describe differences in people's access to information and communication technologies (van Dijk and Hacker 2003).

In their exploration of the digital divide in Albury, Australia, Atkinson, and others found a significant inverse relationship between respondent's age and their access to the Internet (2008). However, Morry (2002) showed that the relationship between age and access to the Internet applies only to those aged 65 years and older. In their comparison between an online survey and a subsequent telephone survey of online survey non-respondents in Arizona, Duda and Nobile (2010) found that non-responders to the online survey were significantly older on average than those who did respond to the online survey.

Respondents whose experience had remained the same expressed the highest desirability for completing online surveys, followed closely by those who felt their experience had 'increased/improved'. In this case, online surveys may be a preferred type of public consultation as it could enable a desired level of detail for input by those respondents whose recreation experience had stayed the same or improved.

Respondents who stated that observed effects detracted greatly from their recreation experience expressed a significantly higher desirability for attending meetings with decision-makers on the land than the other two categories. This may be a logical result,

as it is possible that those who have experienced a great decline in their recreation quality as a result of observed effects may wish to show decision-makers those effects on the landscape and to personally describe how these effects influenced their recreation quality.

One interesting anomaly was that those who stated their recreation quality had 'increased/improved' expressed a higher desirability for attending meetings with decision-makers on the land than did respondents whose experience had remained the same. This could stem from the desire to meet with decision-makers on the landscape to demonstrate what is currently 'working' or what has improved on the landscape as a result of certain actions in the past, including stewardship efforts undertaken by organized recreation use group or other volunteers.

Table 6: Desirability of Public Consultation Types by User Type

Variable	General Trend	Specifics
Age – writing a letter	Younger respondents had a lower desirability for writing a letter than did older respondents	30-39 year olds expressed a significantly lower desirability for writing letters than did those respondents who were 40-49 years old, 50-59 years old or 60 years and older
Age – attending meetings with decision-makers on the land	Older respondents had a slightly higher desirability for attending meetings with decision-makers on the land than younger respondents, with 40-49 year olds having the lowest desirability	40-49 year olds had a significantly lower desirability for attending meetings with decision-makers on the land than did those who were 50-59 years old and those who were 60 and over years old
Age – online surveys	Younger age groups expressed higher levels of desirability for online surveys	Significant differences existed between those who were between 18-49 years old and those who were 60 years and older; significant differences also existed between respondents who were 18-29 years old and those who were 50-59 years old
Membership – attending open houses	Group members expressed higher levels of desirability than non-members	
Membership – public meetings	Group members expressed higher levels of desirability than non-members	
Membership – meeting with decision-makers	Group members expressed higher levels of desirability than non-members	
Membership – Meetings with decision-makers on the land	Group members expressed higher levels of desirability than non-members	
Motorized – writing letters	Non-motorized users expressed a significantly higher desirability for writing letters	
Motorized – completing phone surveys	Motorized users expressed a significantly higher desirability for completing phone surveys	
Gender	No significant differences in desirability for types of public consultation between genders	Gender is the only variable that did not result in significant differences in desirability for types of public consultation
Tenure – writing a letter	Respondents with less tenure had a lower desirability for writing a letter	Respondents with three to five years tenure had a significantly lower desirability for writing a letter than those who had been recreating for over 21 years
Tenure – attending meetings with decision-makers	Respondents with more tenure had a higher desirability for attending meetings with decision-makers	Respondents with one to two years tenure had a significantly lower desirability for attending meetings with decision-makers than did those with over 21 years tenure
Tenure – completing online surveys	Respondents with the most tenure had a lower desirability for completing online surveys	Desirability for completing online surveys was significantly lower for those with more than 21 years tenure compared to those with 3-5 ($p=0.02$), 6-10 ($p=0.035$) and 11-20 years tenure ($p=0.045$)

Variable	General Trend	Specifics
Residence – attending public meetings	Respondents from 'other' communities had a higher level of desirability	
Residence – attending meetings with decision-makers	Respondents from 'other' communities had a higher level of desirability	
Residence – completing paper surveys	Respondents from 'other' communities had a higher level of desirability	
Change in Recreation Quality – attending meetings with decision-makers	Increasing desirability for attending meetings with decision-makers as respondents' level of recreation quality moves from increased/improved through to decreased/declined	Significant difference on levels of desirability for attending meetings with decision makers existed between respondents whose recreation experience had decreased/declined and respondents who stated that their recreation experience had increased/improved
Change in Recreation Quality – attending meetings with decision-makers on the land	Increasing desirability for attending meetings with decision-makers on the land as respondents' level of recreation quality moves from increased/improved through to decreased/declined	An anomaly in this trend is that those who stated their recreation quality had increased/improved expressed a higher desirability for attending meetings with decision-makers on the land than did respondents whose experience had remained the same Post hoc comparisons indicate that significant differences on desirability for attending meetings with decision-makers on the land existed between respondents who believe that their recreation experience had decreased/declined and those respondents who believe that their recreation experience had increased/improved or remained the same/unchanged
Change in Recreation Quality – online survey	Respondents whose experience remained the same expressed the highest desirability for online surveys, followed closely by those who felt their experience had increased/improved	Post hoc comparisons indicated that significant differences on desirability for completing online surveys existed between respondents who believe that their recreation experience had decreased/declined and those respondents who believe that their recreation experience had increased/improved or remained the same/unchanged
Effects/Influence – attending meetings with decision-makers on the land	Higher desirability expressed by 'detracted greatly' respondents	Post hoc comparisons revealed that significant differences existed between those who stated that observed effects detracted greatly from their recreation experience and both of the other categories – respondents who felt that observed effects did not affect or detracted somewhat from their recreation experience

Desired Types of Notification

If land managers or public consultation practitioners wish to engage specific user types, utilizing a preferred type of notification for that user type may be helpful (Table 7). Motorized users expressed significantly higher levels of desirability than did non-motorized users for all four types of notification for public consultation listed in the survey: local newspaper, radio station, and TV station, and government website. This could indicate that motorized users wish to learn about public consultation opportunities through a number of different outlets.

Respondents from 'other communities' expressed a significantly higher desirability for receiving notification in a local newspaper than did 'large city' respondents. This result could reflect the importance of local newspapers in 'other communities' for distributing information about upcoming events. As a comparison, in a recent telephone survey of Alberta's Provincial Parks users, mail ranked the highest followed by email and newspapers as the best way to notify the public about changes to parks (The Praxis Group 2008).

Table 7: Desired Types of Notification

Variable	General Trend	Specifics
Age – local radio station	Younger respondents expressed higher levels of desirability	70% of 18-29 year olds (78) were in favour of this type of notification; less than half of respondents 60 years and older (65) indicated they would like to hear an announcement on a local radio station
Age – notification on government website	A higher proportion of younger respondents expressed they would like to find a notice on a government website	Over half of 18-29 year olds (57) expressed a desire for notification on a government website, while only 31% of those 60 years and older (43) indicated a desire for this type of notification
Membership – local radio station	A higher proportion of group members indicated they would like to hear an announcement on a local radio station	56% (217) of group members indicated they would like notification on a local radio station; 48% (201) of non-members indicated a desire for this type of notification
Motorized – local newspaper	A higher proportion of motorized users expressed that they would like to read a notice in a local newspaper than did non-motorized users	
Motorized – local radio station	A higher proportion of motorized users expressed they would like to hear an announcement on a local radio station than did non-motorized users	
Motorized – local TV station	A higher proportion of motorized users expressed they would like to see an advertisement on a local radio station than did non-motorized users	
Motorized – government website	A higher proportion of motorized users expressed they would like to find a notice on a government website than did motorized users	
Gender – local TV station	A higher proportion of males expressed they would like to see an advertisement on a local TV station than did females	50% of men (327) expressed a desire for notification on a local TV station compared to 38% of women (61)
Tenure –local newspaper	A lower proportion of respondents with 1-2 years tenure would like to read a notice in a local newspaper	Respondents with one to two years tenure expressed the lowest level of desire for notification in a local newspaper at 44% (21). All other tenure categories had at least 57% (56) of respondents expressing a desire for notification in a local newspaper
Residence – local newspaper	A higher proportion of respondents from 'other communities' would like to read a notice in a local newspaper than 'large city' respondents	

Future Research

An important issue for further consideration is the role of the manager and public administrator in these conflicts. They will play a role in them whether by design or by default (Nie 2003). This research project did not specifically target land managers as a stakeholder or user type. Thompson et al. (2007) highlight that future study is necessary to determine how recreation users and managers differ in their definitions of the problems and solutions for unmanaged recreation. According to Schuster (2007), it is the responsibility of land managers to serve the public and at the same time manage the resource according to prescribed standards in a sustainable manner. Decisions balancing recreational carrying capacity, resource allocation, and public demand will become increasingly difficult in the future (Schuster 2007).

Trend Information

For future research, it would be useful to repeat the same survey for the same region over time. This research project only provided a snapshot of the situation at one point in time. When survey results are used to inform management policies, it is impossible to determine if visitor composition, along with individual characteristics, behaviour, expectations, and experience evaluations have changed as a result of structural or contextual change (Kuentzel and Heberlein 2003). Although cross-sectional visitor research is useful for the provision of current information, it can become much more valuable if repeated so that both standard cross-sectional and trend information can be generated (Kuentzel and Heberlein 2003).

Survey Design

The outlier factor was not sufficiently robust for MANOVA comparisons. It was made up of two statements: 1) 'it is important to maintain recreation opportunities for future generations,' and 2) 'recreation on public lands in southwestern Alberta is increasing.' If a similar survey will be utilized in the future, it would be useful to expand the survey to contain similar statements to further research the two problematic statements, or to remove these two statements from the survey.

Another item of survey design to consider is a Likert Scale with a range of one to five instead of one to seven. A compressed scale may be preferable for this survey as it could reduce the amount of variance. It would also be beneficial to generate a random sample in order to make inferences about the population of interest as opposed to inferences about the sample. Finally, it would be ideal if there were an increased number of respondents and more balanced data.

CHAPTER SIX: RECOMMENDATIONS & CONCLUSION

Survey respondents expressed high levels of agreement on the need for access management on public lands in southwestern Alberta. These landscapes are experiencing increasing pressure from a diversity of uses, and this pressure will only grow with time as the amount of public lands remains constant. Bearing in mind the need for alignment with the South Saskatchewan Regional Plan, access management is a tool that government land managers can use to address the social/recreational, ecological and hydrological issues caused by recreation on public lands. Based upon the findings of my research project, I wish to put forward the following recommendations for access management planning on public lands in southwestern Alberta.

Use a variety of public consultation techniques including opportunities for recreation users to meet with decision-makers, especially on the landscape

Research participants expressed higher levels of desirability for a variety of types of public consultation. Survey respondents expressed higher desirability for conveying their views in person (e.g., open houses, public meetings, meetings with decision-makers), and many endorsed the idea of meeting with decision-makers on the landscape. Meeting on the landscape may enable public consultation participants to provide compelling visuals to reinforce the message they wish to convey. It may also provide a means to capitalize on the power of place attachment (see below). However, many respondents also expressed a preference for paper, online and phone surveys. This may be owing to a desire to express views privately due to an inhibition to speak publicly, a desire to be

confidential about one's views, and/or a lack of confidence in one's knowledge level about the issues. As a result, I recommend using a variety of public consultation techniques so that respondents have the option to express their views in both a public and/or private fashion.

Work toward using a collaborative process for access management planning

"Collaboration is defined as a process through which parties who see different aspects of a problem can constructively explore their differences and search for solutions that go beyond their own limited vision of what is possible" (Gray 1989, p. 5). Such an approach could be useful to address the 'us-versus-them' perceptions that were expressed during the focus groups and online survey in a number of different ways including divisions between recreation users who were: rural/urban, motorized/non-motorized, and new/old users to the area. Public participation is increasingly "a means to reduce the us-versus-them dynamic and create opportunities for participatory learning" (Walker and Daniels 2001, p. 259).

A plan developed through a collaborative planning process is more likely to be successfully implemented as stakeholders are more likely to support its implementation owing to their involvement in the plan's development (Gunton, Day et al. 2003). Based upon his experience, and the experience of the Sonoran Institute, Propst (2005) stated that the opportunity to use collaboration to resolve land-use conflict comes down to three principles: "1) tap into the power of place; 2) articulate a compelling vision for the future of a landscape that appeals to the hopes and aspirations of the public; and 3) produce

tangible outcomes through collaborative partnerships" (p. 19). Collaborative planning can also generate 'social capital' through improved stakeholder relationships, stakeholder skills and knowledge enabling increased community capacity to solve other problems (Gunton, Day et al. 2003). According to Hibbard and Lurie (2000), stocks of social capital are self-reinforcing and cumulative as success in one effort builds connections and trust that carry over into other endeavours.

Access management planning can be a contentious issue within Alberta, as evidenced by past access management planning processes that have resulted in conflict through heated debates and even fist fights (Roberts 2010). Working toward using collaboration is included as one of my key recommendations to suggest a paradigm shift from the current "top-down" government approach to access management through the creation of Forest Land Use Zones without any public consultation to an approach that realizes a shared vision for sustainable recreation use on public lands.

I acknowledge that a number of preconditions will need to be in place prior to realizing a fully collaborative process for access management planning in Alberta. In the interim, elements of collaborative processes can be incorporated into access management planning by continuing to bring a diversity of stakeholders into the planning process and building upon the common ground that many stakeholders share (as demonstrated by this research project). Further, there are many cases of successful collaborative processes in the face of challenging natural resource conflicts, such as the Blackfoot Challenge in Montana, which can be drawn upon to design more collaborative processes.

Utilize place attachment

The results of a study by Payton and others (2005) supported the idea that "attachment to place can serve as a connection or mutual bond between individuals that fosters positive relationships and can nurture the development of trust among individuals" (p. 525). According to Ryan (2004) , "trust grows out of the interdependent nature of activity, where one party relies on another, or perhaps many others, to achieve desired results" (p. 3). In their study of natural resource planners, Lachapelle and others (2003) found that "trust was regarded as an integral component of the planning process enabling relationships to be built and to prosper" (p. 486). Managers can take advantage of place attachment's uniting force in a collaborative management process:

> By emphasizing that all groups are connected by a mutual attachment and concern for the resource, managers can encourage user groups to interact and cooperate. … The care and maintenance of the resource is an opportunity, a reason, for people to interact, work together, and develop relationships (Payton, Fulton et al. 2005, pp. 525-526).

Establish common ground and a shared vision for the landscape

> Design intelligence fails when greed, narrow self-interest, and individualism take over. Good design is a cooperative community process requiring people who share common values, common understanding of consequences, and goals that bring them together and hold them together (Orr 1998, p. 335).

Wondolleck and Yaffee (2000) stated that groups or agencies who have not previously interacted or that have existing relationships based on disagreements "may simply not understand that they share goals, yet perceiving common goals is critical as a starting

point in a problem-solving process" (p. 80). A planning effort must be able to identify a clear, specific set of mutually accepted goals (Lachapelle, McCool et al. 2003). Participants [in the South Saskatchewan Region for the Land-Use Framework] need to approach the process of working towards shared outcomes- not winning or losing- otherwise, everyone is arguing for the status quo (Blackwood 2009). Those involved in a collaborative process need to have a future orientation, and to focus on the common vision, rather than being bogged down in the past (Hasenauer 2005). Blackwood (2009) stated that people need to see themselves as part of a solution.

Establishing a common vision produces a sense of accomplishment for those working within a collaborative process, and begins to build relationships and faith that the group can work together (Wondolleck and Yaffee 2000). Wondolleck and Yaffee (2000) cited one example of a collaborative initiative called the Coalition for Unified Recreation in the Eastern Sierra where the generation of a common vision created "true ownership in the final product by divergent groups who may have never agreed on anything ever before" (p. 81). One technique utilized by a collaborative initiative in East St. Louis was to distribute disposable cameras to participants and task them to take photos of ten things that they liked and ten things that they did not like within their community. The information revealed by the photographs helped to identify a shared vision (Reardon 1998).

Use areas of agreement to achieve early successes for the planning process

Areas of agreement, such as inadequate enforcement of existing rules and regulations or the importance of education to promote responsible use of public lands, provide foundations upon which to build early successes for collaboration in the access management process. These areas of agreement can be used to demonstrate to a diversity of people involved in public consultation that they have some common interest areas on which they can work together in a constructive fashion as discussed above. Early successes may also facilitate the building of trust between stakeholders, which is critical to the success of collaborative processes.

Honour the role of all stakeholders

> Collaboration that overcomes wickedness can only happen in an atmosphere of inclusiveness where local recreation resource managers make the time to seek out and listen to local viewpoints and insights. Such collaboration can 1) provide unique insights for addressing issues that otherwise may have been overlooked, 2) foster social relationships and trust between people who previously refused to come to the table, and 3) build local social networks that allow shared visions and collective action (Brooks and Champ 2006, p. 795).

According to the US Institute for Environmental Conflict Resolution and the Morris K. Udall Foundation (2005), inviting all stakeholders into the conversation is critical:

> [T]he power of collaboration is in seeing all sides of a decision or action, all the implications over a wider scale – and this contributes to wider, more complete, more durable solutions. A decision is diminished, and its implementation threatened, when key constituencies are not included in the process of crafting that decision (p. 76).

Once a plan is developed, stewardship committees, public monitoring, stewardship or public steering groups are key to successfully implementing access management plans; they provide an interface between the public and users and land managers (Eos Research & Consulting Ltd. 2009). As financial and other resources decline, public agencies increasingly attempt to forge partnerships with the public to increase available resources for managing public lands as well as encouraging enhanced stewardship of these lands (Bond and Fisher 2005; Payton, Fulton et al. 2005).

Provide sufficient time and resources, and honour the process

> Yes, it was noted often that the collaborative process takes more time – particularly upfront – but this investment yields better results than time spent at the tail end of decisions, or after decisions are made and the lead agency ends up spending its time defending itself against appeals, litigation, or dealing with poorly conceived and badly implemented decisions (US Institute for Environmental Conflict Resolution and the Morris K. Udall Foundation 2005, pp. 77-78).

Collaborative processes require time and resources. Referencing the Ghost-Waiparous access management planning process, Tracey Cove (ASRD Operations Section Head) stated that the process took a very long time. This was frustrating as she wanted to move to implementation in an expedient fashion. However, through observing the process she realized that it takes a long time to find common ground in order to create a shared vision for moving forward. She also acknowledged that the government generally doesn't give these processes enough time (Cove 2009). "Stronger government-citizen relations need

time to be built and to show effects" (Organization for Economic Co-operation and Development (OECD) 2001b, p. 95).

The National OHV Implementation Team listed the availability of resources (funding and other resources, such as volunteers) as one of the key items for success in their case study report on OHV use and collaboration (US Institute for Environmental Conflict Resolution and the Morris K. Udall Foundation 2005). Findings from Wagenet and Pfeffer's case studies on citizen involvement in water resource management "emphasize the importance of financial resources and strong commitment to the principle of civic engagement in order to increase and sustain the democratic underpinnings of environmental planning" (2007, p. 801).

Process is of paramount importance in successful public participation, and more-intensive mechanisms are generally more successful than less-intensive mechanisms (Beierle and Cayford 2002). Reed (2008) highlights the need for replacing "the 'tool-kit' approach to participation, which emphasises selecting the relevant tools for the job, with an approach that views participation as a process" (p. 2421). Speaking on their extensive review of 239 cases of public involvement in environmental decision making, Beierle and Cayford (2002) stated "Processes in which agencies are responsive, participants are motivated, the quality of deliberation is high, and participants have at least a moderate degree of control over the process are more successful than processes that do not have these characteristics" (p. 74).

Incorporate a strong education component in the resulting access management plan

Education may help promote an awareness of responsible and sustainable behaviour by all recreation activity groups, thereby reducing the overall impact to the resource (Manning 1999). Eighty four percent or respondents strongly agreed that education is the best way to encourage responsible use of public lands. "Education tells the visitor what you expect of them. You cannot be upset with what the public does if you do not tell them what you want them to do" (Bell 2005, p. 91).

One way to include a strong education component in the resulting access management plan is through extension. The discipline of extension is a type of non-formal education that focuses on providing the best available information to specific stakeholder groups to improve practices that affect the environment (Sutherland and Leech 2007). Extension focuses on helping people learn as opposed to teaching people (Knowles 1950).

The Ghost-Waiparous Access Management Plan calls for the use of the following types of educational tools: brochures and maps; website; information kiosks; signs; partnership opportunities; stewardship monitoring group; and continuing use of the Province of Alberta's 'Respect the Land' program. Given the similarities between my study area and the Ghost-Waiparous, it would be useful seek out/carry out evaluation on the effectiveness of these educational tools in the Ghost-Waiparous, and incorporate the identified successful tools as part of the access management plan for the study area.

"Education is clearly essential, especially when undergoing a significant transition to more managed off-road vehicle recreation. However, a perceptible commitment to

enforcement is equally indispensable, and must be combined with effectiveness monitoring and adaptive management" (Archie 2007, p. 5).

Couch the access management planning process within an ecosystem-based management approach & incorporate adaptive management

Ecosystem-based management could provide a tool to address respondents' concerns about the current level of effects from both recreation and industrial activities on public lands in southwestern Alberta. One variety of ecosystem-based management is community-based ecosystem management (CBEM). CBEM`s fundamental premise is connecting communities to public lands for the purposes of increasing ecosystem stewardship and community sustainability (Burns 2001).

Grassroots Ecosystem-based Management, or GREM, is another variety of Ecosystem-based Management which would be appropriate for the study area. GREM relies

> extensively or exclusively on collaborative decision processes, consensus, and active citizen participation, which means that private citizens and stakeholders often take on leadership roles and are involved directly in deliberative decision-making, implementation, and enforcement processes along with government officials, especially when it comes to how goals are to be achieved (Weber 2003, p. 4).

GREM efforts are iterative and ongoing instead of being one-time problem solving efforts (Weber 2003). Such an approach may help to address the 'wicked' nature of unmanaged recreation.

Several focus group participants called for access management planning that was initiated and driven by the public. "GREM is initiated primarily, but not always entirely, by citizens and/or non-governmental entities like non-profit groups (i.e., the impetus for action comes primarily from "below" rather than from the government "above")" (Weber 2003, p. 4).

Sustainable development will come from the integration of adaptive management- to deal with the scientific uncertainty and complexity- and political negotiation, which meets the need for an involved citizenry (Lee 1993). Brooks and Champ (2006) state that unmanaged recreation presents a challenge to both researchers and managers of outdoor recreation in the United States because it is shrouded in uncertainty resulting from disagreement over the definition of the problem, the strategies for resolving the problem, and the outcomes of management. Adaptive management could provide a means to address the aforementioned 'wickedness' of unmanaged recreation. Although speaking specifically about addressing wildlife and recreation interaction, Gaines, Singleton and others (2003) suggest that managers use an adaptive management approach because of the complexity and uncertainty of these issues.

> Time needs to be spent developing shared understandings of the system to be managed. This should involve the groups and individuals who know the system best, who are embedded within in and who hold a stake in what happens to it. With iterative input from stakeholders in this way, we have shown that it is possible to identify and adapt participatory approaches for successful adaptive management (Stringer, Dougill et al. 2006, p. 18).

Conclusion

Overall, survey respondents expressed high levels of agreement that access management planning is needed for public lands in southwestern Alberta. However, there were significant differences for both the beliefs (opinions about what is currently happening on the landscape) and management (beliefs about the need for access management) factors for the following variables: age, membership to an organized recreation use group, motorized/non-motorized recreation users, gender, length of time spent recreating in the area, change in recreation quality and observation of effects/influence on recreation quality. The only variable that did not result in significant differences for the beliefs and management factors was place of residence ('large city' vs. 'other community').

With regard to desirability of public consultation types, survey respondents expressed higher desirability for online surveys and conveying their views in person (e.g., open houses, public meetings, meetings with decision-makers), and many endorsed the idea of meeting with decision-makers on the landscape. Non-parametric tests indicated there were no significant differences in desirability of public consultation types between genders. However, significant differences in desirability of public consultation types existed between all other variables including: age, membership to an organized recreation use group, motorized/non-motorized recreation users, place of residence, length of time spent recreating in the area, change in recreation quality and observation of effects/influence on recreation quality. Significant differences also existed between variables for past public consultation experience, desired types of notification for public consultation and desired feedback following public consultation.

The Government of Alberta has acknowledged a need to manage recreation use on public lands. An access management planning process for the study region could be tailored based upon the findings of this study. Additionally, recreation access management planning efforts in the region will need to align with the outcomes of the Land-use Framework's South Saskatchewan Regional Plan. Recreation access management planning for southwestern Alberta presents an opportunity for the Government of Alberta and recreation users to work together to envision and realize a desired future for public lands. However, the process does not end once an access management plan is created. It is important to look beyond a plan, and to focus on building relationships and partnerships that will last.

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APPENDICES

Appendix A: Ethics Approval & Amendments

UNIVERSITY OF CALGARY

CERTIFICATION OF INSTITUTIONAL ETHICS REVIEW

This is to certify that the Conjoint Faculties Research Ethics Board at the University of Calgary has examined the following research proposal and found the proposed research involving human subjects to be in accordance with University of Calgary Guidelines and the Tri-Council Policy Statement on *"Ethical Conduct in Research Using Human Subjects"*. This form and accompanying letter constitute the Certification of Institutional Ethics Review.

File no:	**5631**
Applicant(s):	**Rachelle L. Haddock**
Department:	**Environmental Design, Faculty of**
Project Title:	**Assessing Mechanisms for Engagement in Recreation Access Management for the Livingstone Range (Recreational Off-Highway Vehicle [OHV] Access Management for the Livingstone Porcupine Hills)**
Sponsor (if applicable):	**SSHRC**

Restrictions:

This Certification is subject to the following conditions:

1. Approval is granted only for the project and purposes described in the application.
2. Any modifications to the authorized protocol must be submitted to the Chair, Conjoint Faculties Research Ethics Board for approval.
3. A progress report must be submitted 12 months from the date of this Certification, and should provide the expected completion date for the project.
4. Written notification must be sent to the Board when the project is complete or terminated.

Janice Dickin

Janice Dickin, Ph.D, LLB,
Chair
Conjoint Faculties Research Ethics Board

APR 17 2008

Date:

Distribution: (1) Applicant, (2) Supervisor (if applicable), (3) Chair, Department/Faculty Research Ethics Committee, (4) Sponsor, (5) Conjoint Faculties Research Ethics Board (6) Research Services.

UNIVERSITY OF CALGARY

MEMO

Conjoint Faculties Research Ethics Board (CFREB)
Research Services Office
Main Floor, Energy Resources Research Building
Research Park
Telephone: (403) 220-3782 or (403) 210-9863
Fax: (403) 289-0693
Email: csjahrau@ucalgary.ca or rburrows@ucalgary.ca

To: Rachelle Haddock
Faculty of Environmental Design

Date: October 3, 2008

From: Dr. Janice P. Dickin, Chair
Conjoint Faculties Research Ethics Board

Re: Approval of Modification for: Assessing Mechanisms for Engagement in Recreation Access Management for the Livingstone Range (Recreational Off-Highway Vehicle [OHV] Access Management for the Livingstone Porcupine Hills)
Original Approval Date: April 17th 2008
File No: 5631

The Certificate of Institutional Ethics Review issued on April 17th 2008 continues in force and extends to the modifications as set out in your email/memo dated October 1st 2008. Your request to (i) administer a second online survey utilizing the submitted online consent document and appropriate recruitment notice, and (ii) to offer online survey participants the opportunity to enter a draw for one of ten $50 cash prizes, is approved, as described.

You should attach a copy of the documentation you provided in order to request the modification, together with a copy of this memorandum, to the original Certification in your files.

Sincerely,

Janice Dickin

Janice Dickin, Ph.D., LLB., Professor
Faculty of Communication and Culture
Chair, Conjoint Faculties Research Ethics Board

Cc:

UNIVERSITY OF CALGARY

CONJOINT FACULTIES RESEARCH ETHICS BOARD

Annual Renewal / Progress / Final Report

Research Services, ERRB Building, Research Park

Submit by email to: rburrows@ucalgary.ca

1. Applicant: (USE RESTRICTED: Faculty, students, staff from the UofC)

Name

Rachelle Leanne Haddock

Department/Faculty: Environmental Design

E-mail Address: rlhaddoc@ucalgary.ca | Telephone: 403-229-0195

If you are a student, include your supervisor's name and email address here

Dr. Michael S. Quinn, quinn@ucalgary.ca

2. Other Participants: If another person is involved in the project, please provide their name, department or other details as required to identify them. Use an attachment, if necessary

3. Project Details:

3.1 Exact Title of the Project (and File No. if available)
"Assessing Mechanisms for Engagement in Recreation Access Management for the Livingstone Range (Recreational Off-Highway Vehicle [OHV] Access Management for the Livingstone Porcupine Hills)" (File # 5631)

3.2 Have you commenced this research? [X] Yes When did it commence? Date: June 2008
[ ] No If no, why not (attach)

3.3 Is the study completely closed to all research activity? [ ] Yes When was it closed? Date: _____
If the study is not completely closed, what is the expected date? Date: January 2010

3.4 How many people participated in the research? 975

3.5 Have all modifications been reported? [X] Yes [ ] No (If no, please attach)

3.6 Have the results been published or presented? [ ] No [X] Yes, if yes, indicate where results can be located.
International Symposium on Society and Resource Management 2009 – Vienna, Austria

3.7 Have there been any complaints about the research [X] No [ ] Yes, if yes, please attach information with details.

Signature of Applicant:

Thank you for submitting your **report** on the above protocol.

As Chair of the Conjoint Faculties Research Ethics Board, I am pleased to advise you that ethical approval for this proposal has been extended to: JAN 31 2010. Please note that this approval is contingent upon strict adherence to the original protocol. Prior permission must be obtained from the Board for any contemplated modification(s) to the original protocol. An annual progress/final report concerning this study will be required by JAN 31 2010

Please accept the Board's best wishes for continued success in your research.

Kathleen Oberle, Ph.D.,
Chair, Conjoint Faculties Research Ethics Board

_____ Date: SEP 08 2009

UNIVERSITY OF CALGARY

CONJOINT FACULTIES RESEARCH ETHICS BOARD

Annual Renewal / Progress / Final Report

Research Services, ERRB Building, Research Park

Submit by email to: rburrows@ucalgary.ca

1. Applicant: (USE RESTRICTED: Faculty, students, staff from the UofC)

Name

Rachelle Leanne Haddock

Department/Faculty: Environmental Design

E-mail Address: rlhaddoc@ucalgary.ca | Telephone: 403.891.3334

If you are a student, include your supervisor's name and email address here

Dr. Michael S. Quinn, Quinn@ucalgary.ca

2. Other Participants: If another person is involved in the project, please provide their name, department or other details as required to identify them. Use an attachment, if necessary

3. Project Details:

3.1 Exact Title of the Project (and File No. if available): Assessing Mechanisms for Engagement in Recreation Access Management for the Livingstone Range (Recreational Off-Highway Vehicle [OHV] Access Management for the Livingstone Porcupine Hills) (CFREB file # 5631)

3.2 Have you commenced this research? [X] Yes When did it commence? Date: June 2008

[ ] No If no, why not (attach)

3.3 Is the study completely closed to all research activity? [ ] Yes When was it closed? Date: _____

If the study is not completely closed, what is the expected date? Date: June 2010

3.4 How many people participated in the research? 975

3.5Have all modifications been reported? [X] Yes [ ] No (If no, please attach)

3.6 Have the results been published or presented? [ ] No [X] Yes, if yes, indicate where results can be located.

International Symposium on Society and Resource Management 2009 – Vienna, Austria

3.7 Have there been any complaints about the research [X] No [ ] Yes, if yes, please attach information with details.

Signature of Applicant:

Thank you for submitting your **report** on the above protocol.

As Chair of the Conjoint Faculties Research Ethics Board, I am pleased to advise you that ethical approval for this proposal has been extended to: JUN 3 0 2010. Please note that this approval is contingent upon strict adherence to the original protocol. Prior permission must be obtained from the Board for any contemplated modification(s) to the original protocol. An annual progress/final report concerning this study will be required by JUN 3 0 2010

Please accept the Board's best wishes for continued success in your research.

Kathleen Oberle, Ph.D.,
Chair, Conjoint Faculties Research Ethics Board

Kathleen Oberle Date: DEC 0 9 2009

UNIVERSITY OF CALGARY

CONJOINT FACULTIES RESEARCH ETHICS BOARD

Annual Renewal / Progress / Final Report

Research Services, ERRB Building, Research Park

Submit by email to: rburrows@ucalgary.ca

1. Applicant: (USE RESTRICTED: Faculty, students, staff from the UofC)

Name

Rachelle Leanne Haddock

Department/Faculty: Environmental Design

E-mail Address: rlhaddoc@ucalgary.ca | Telephone: 403.891.3334

If you are a student, include your supervisor's name and email address here

Dr. Michael S. Quinn, Quinn@ucalgary.ca

2. Other Participants: If another person is involved in the project, please provide their name, department or other details as required to identify them. Use an attachment, if necessary

3. Project Details:

3.1 Exact Title of the Project (and File No. if available): Assessing Mechanisms for Engagement in Recreation Access Management for the Livingstone Range (Recreational Off-Highway Vehicle [OHV] Access Management for the Livingstone Porcupine Hills) (CFREB file # 5631)

3.2 Have you commenced this research? [X] Yes When did it commence? Date: June 2008

[ ] No If no, why not (attach)

3.3 Is the study completely closed to all research activity? [ ] Yes When was it closed? Date: _____

If the study is not completely closed, what is the expected date? Date: Dec. 2010

3.4 How many people participated in the research? 975

3.5Have all modifications been reported? [X] Yes [ ] No (If no, please attach)

3.6 Have the results been published or presented? [ ] No [X] Yes, if yes, indicate where results can be located.

International Symposium on Society and Resource Management 2009 – Vienna, Austria

3.7 Have there been any complaints about the research [X] No [ ] Yes, if yes, please attach information with details.

Signature of Applicant:

Thank you for submitting your **report** on the above protocol.

As Chair of the Conjoint Faculties Research Ethics Board, I am pleased to advise you that ethical approval for this proposal has been extended to: DEC 3 1 2010. Please note that this approval is contingent upon strict adherence to the original protocol. Prior permission must be obtained from the Board for any contemplated modification(s) to the original protocol. An annual progress/final report concerning this study will be required by DEC 3 1 2010

Please accept the Board's best wishes for continued success in your research.

Kathleen Oberle, Ph.D.,
Chair, Conjoint Faculties Research Ethics Board

Kathleen Oberle Date: JUN 8 2 2010

Appendix B: Focus group & online survey promotion materials

ENVIRONMENTAL DESIGN | UNIVERSITY OF CALGARY

MIISTAKIS INSTITUTE

Are you interested in the future of recreation access management for public lands in southwestern Alberta?

I am a graduate student at the University of Calgary's Faculty of Environmental Design. I am conducting a study on how recreation users perceive access management issues on public lands in southwestern Alberta, and how recreation users wish to be involved in public consultation for access management planning in southwestern Alberta.

The **purpose** of this research is to explore how to most effectively engage recreation users and other regional stakeholders in public consultation, in order to realize successful access management planning for public lands in southwestern Alberta.

The **objectives** for this research project are to examine and evaluate:

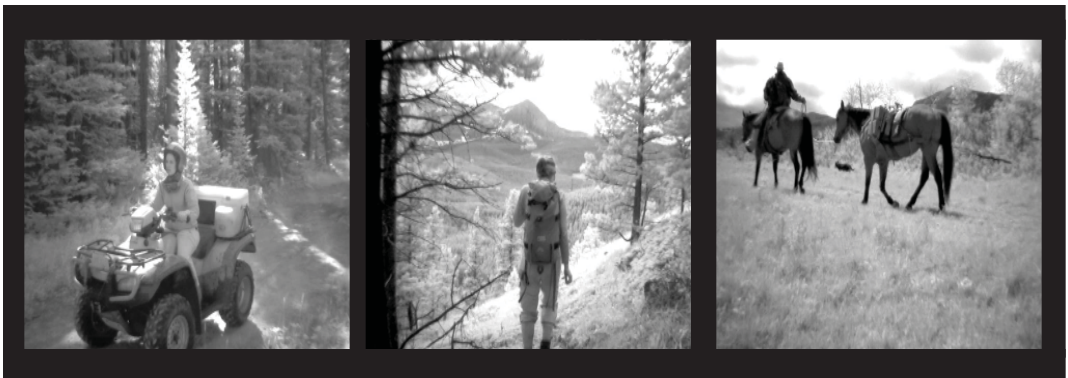
- recreation access management issues;
- the values and attitudes of recreation users and other regional stakeholders towards those issues; and
- the acceptability and desirability of different public consultation processes to recreation users and other regional stakeholders to assist with access management planning.

I am seeking approximately 25 individuals who are recreation users on public lands in southwestern Alberta (e.g., Castle, Livingstone, Willow Creek, Bob Creek and Porcupine Hills). I will require between 90-120 minutes of your time during which you will participate in a focus group session (a small discussion group of approximately 6 people). Focus groups will be scheduled for June 16-27, 2008 in both Pincher Creek and the Municipality of Crowsnest Pass. By participating in a focus group, you will have an opportunity to share your opinions on access management and how you wish to be engaged in public consultation regarding access management. Your input will help to craft a series of recommendations regarding public consultation for access management in southwestern Alberta.

Please send me an email, or phone me, if you are willing to participate in one of the focus group sessions.

Sincerely,

Rachelle Haddock, email: rlhaddoc@ucalgary.ca or (403) 202-3772
Project Supervisor: Dr. Michael S. Quinn, quinn@ucalgary.ca



Are you interested in the future of recreation access management for public lands in southwestern Alberta?

I am a graduate student at the University of Calgary in the Faculty of Environmental Design. I am conducting a study on how recreation users perceive access management issues on public lands, and how recreation users wish to be involved in public consultation for access management planning. The purpose of this research is to explore how to most effectively engage recreation users and other regional stakeholders in public consultation in order to realize successful access management planning.

I am seeking approximately 25 individuals who are recreation users on public lands in southwestern Alberta. I will require between 90-120 minutes of your time during which you will participate in a focus group session (a small discussion group of approximately 6 people). Focus groups will be scheduled for June 16-27, 2008. By participating in a focus group, you will have an opportunity to share your opinions on access management and how you wish to be engaged in public consultation regarding access management.

Please email or call Rachelle Haddock if you are interested in participating:
rlhaddoc@ucalgary.ca or 403.202.3772

ENVIRONMENTAL DESIGN | UNIVERSITY OF CALGARY

MIISTAKIS INSTITUTE FOR THE ROCKIES

Are you interested in the future of recreation access management for public lands in southwestern Alberta?

A University of Calgary graduate student is looking for individuals who recreate on public lands in southwestern Alberta to participate in a study on how recreation users perceive access management issues, and how recreation users wish to be involved in public consultation for access management planning in southwestern Alberta. Participants are needed for both focus group sessions (small discussion groups of approximately 6 people) and an on line survey. If you are interested in participating, please clearly print your name, email address and phone number below.

Name	Email Address	Phone Number

Email to focus group participants for online survey recruitment

Dear focus group participants,

I hope that this message finds you all well, and enjoying fall.

I am pleased to let you know that the online survey portion of my study on access management and public consultation for public lands in southwestern Alberta is finally ready! Over the past several months, I have created an online survey based upon the input that you provided during the focus groups in June of this year.

I will forward the link for the online survey to you in a separate email message tomorrow (Thursday, Oct. 30). I would greatly appreciate if you would be willing to take 10 to 15 minutes of your time to fill out an online survey. Also, I kindly ask you to please forward the survey broadly to anyone who recreates on public lands in southwestern Alberta. I am striving to get as many people as possible to share their views!

I wish to let you know that if you fill out a survey, you will have an opportunity to enter a draw for one of 10 cash prizes of $50. And once again, I wish to stress that this survey will provide you with another opportunity to share your views about access management and public consultation for access management planning on public lands in southwestern Alberta.

Please feel free to contact me via email or phone (403.891.3334) should you have any questions or concerns.

Kind regards,
Rachelle Haddock

General promotional email for online survey recruitment

****PLEASE CIRCULATE WIDELY****

Are you interested in the future of recreation access management for public lands in southwestern Alberta?

I am a graduate student at the University of Calgary in the Faculty of Environmental Design. I am carrying out a study on how recreation users perceive access management issues on public lands, and how recreation users wish to be involved in public consultation for access management planning. The purpose of this research is to explore how to most effectively engage recreation users in public consultation in order to realize successful access management planning.

I am seeking people who are recreation users on public lands in southwestern Alberta to fill out an online survey. The online survey contains approximately 15 questions and will require between 10-15 minutes of your time. By completing an online survey, you will have an opportunity to share your opinions on access management and how you wish to be engaged in public consultation. Your input will help to craft a series of recommendations regarding public consultation for access management on public lands in southwestern Alberta. Further, if you complete an online survey, you will have the opportunity to enter a draw to win one of 10 cash prizes of $50.

Please click on the following link to complete the survey:

http://homepages.ucalgary.ca/~rlhaddoc/index.html

The deadline to complete the survey is Nov. 28, 2008.

Thank you very much for your time. If you have any questions about my study, or the online survey, please contact me via email (rlhaddoc@ucalgary.ca) or phone (403.891.3334).

Kind regards,

Rachelle Haddock

UNIVERSITY OF CALGARY

news release

EXTERNAL RELATIONS

COMMUNICATIONS P: (403) 220-4756 F: (403) 282-8413 E: uofcnews@ucalgary.ca

November 14, 2008

Survey gauges value of Alta's Eastern Slopes

Beautiful but busy southwest corner the focus of new U of C study

The breathtaking foothills and forests of southwestern Alberta are a special place to an increasing number of people, and conflicts continue to arise from the ways these public lands are managed.

Rachelle Haddock, a graduate student with the University of Calgary's Faculty of Environmental Design (EVDS), is conducting an online survey in hopes of learning more about how people can help influence decisions when it comes to these special places.

"My survey looks specifically at people who like to recreate in this area of Alberta and what they see as potential access management issues," says Haddock. "And I'm trying to gauge how they wish to involved in future consultation for access management planning."

Haddock's Master degree research is based on the fact that land-use planning and natural resource issues are largely people-based. And the conflicts that arise over how we use and value our resources are often a result of how we attach meanings to landscapes, resources and ecosystems.

"Without a good public consultation process, any recreation access management plan has a greatly reduced chance of successful implementation."

The area that Haddock is studying are public lands southwest of Calgary including the Porcupine Hills west to the British Columbia border and from the southern border of Kananaskis Country to the northern border of Waterton Lakes National Park.

"The eastern slopes of southwestern Alberta are a provincial treasure trove of ecological goods and services, including outdoor recreation," says Mike Quinn, an associate professor at the U of C's EVDS Faculty. "Research towards access management will help to ensure that the landscapes of our foothills and Rockies will provide valued benefits well into the future."

Haddock's study dovetails into two large provincial initiatives, including the recent Land-use Framework and the C5 Forest Management Plan, but neither look specifically at recreation use. The findings of Haddock's research will be useful not only to public land managers in Alberta but all over North America where all-terrain vehicles, hikers, bikers and horseback riders must share the trails and access points.

The survey, now live on the Internet, takes less than 15 minutes to fill out and respondents are qualified to win cash prizes. But more importantly, by answering the survey, respondents can share their opinions on how they'd like to see recreation on these prized public lands managed going forward.

The survey can be accessed at:

http://homepages.ucalgary.ca/~rlhaddoc/index.html

Media contact:

To contact Rachelle Haddock, please call James Stevenson in the University of Calgary's External Relations department: O-403-210-6308 or C-403-512-6756

Appendix C: Focus group guide

Focus Group Guide – June 2008

Introduction to myself, recorder and study

- Explain why participants are here, how they have been selected, and thank them for their participation

Ethics

- Anonymity
- If you opt to leave the focus group session, you are free to go, but the information you provide up to that point is retained
- Permission to record session?
- Collect signed forms

Ground Rules for the Focus Group

- Please respect what each other has to say, and do not interrupt each other
- We will go in rounds
- If wish to follow-up on someone's comment, please raise your hand
- Ensure that everyone has a chance to have their input heard
- Will be an active facilitator to ensure that we finish on time

Group Introductions

- Your name, where you live and what your profession is/was

Process for Focus Group

- Explain process: three themes to cover during session
- Define vocabulary (e.g. recreation user, other regional stakeholder, public lands in southwestern Alberta, etc.)

Three main themes:

1. Access management issues: *What access management issues are of concern to participants?*
2. Further defining access management issues: *What attitudes and values do participants express towards the access management issues?*
3. Public Consultation: *What sort of public consultation processes would be acceptable and effective for access management planning for public lands in southwestern Alberta?*

Introduction

Theme 1: Access Management Issues

The intent of this section is to explore how participants perceive access management issues on public lands in southwestern Alberta.

**Ask a few people at selected spots around the table to answer the main questions and then ask others "Is this case for you as well?" Repeat this method as required throughout the duration of the focus group.*

Questions:
a) Please describe how you recreate on public lands in southwestern Alberta?

- How long have you been recreating on public lands in southwestern Alberta? How do you recreate on public lands in southwestern Alberta, and where specifically do you carry out your recreation activities?

- Have you experienced a change in the quality of your recreation experience since you began recreating there?

b) In your opinion, what access management issues exist on public lands in southwestern Alberta?

- Probes: When did you first notice the issue? Has the issue become worse, or has it improved?

- Do you anticipate any other access management issues arising in the future?

c) Is there anything else you can tell me about access management issues before we move on to discuss how you feel about these access management issues?

Theme 2: Further Defining Access Management Issues
The intent of this section is to explore individual's attitudes and values towards recreation access management issues. This information will be useful when considering the range of issues that the public consultation process for access management on public lands in southwestern Alberta will need to consider.
Questions:
a) How do you feel about the access management issues that you have identified?

- Do others share your views about access management issues on public lands in southwestern Alberta?

- Do you feel that the issues you have identified should be regulated by the government? Or, should they be managed by recreation user groups or individual users?

- What do you value most about your recreational use of public lands in southwestern Alberta?

b) Is there anything else you can tell me about how you feel about access management issues on public lands in southwestern Alberta before we move on to discuss public consultation for access management?

Theme 3: Public Consultation

Now that attitudes and values towards access management have been discussed, the intent of this section is to explore how individuals wish to be involved in public consultation for access management planning for public lands in southwestern Alberta.

Consultation involves actively seeking the opinions of interested and affected groups – from both citizens and stakeholders. Both government and industry carry out public consultation. It is a two-way flow of information, which may occur at any stage of regulatory development, from problem identification to evaluation of existing regulation. Consultation is increasingly concerned with the objective of gathering information to facilitate the drafting of higher quality regulation. For example, the Government of Alberta is currently seeking feedback on the draft land-use framework via an on line survey or a mail-out survey.

Questions:
a) Have you been involved in any public consultation processes in the past? If so, what process were you involved in, and in what capacity were you involved (i.e., attending public meetings, filling out an online workbook, providing feedback through a letter or email message)?

- Probes: What were the strengths and weaknesses of each approach? How much time commitment was involved? Was it too time intensive or not time intensive enough? What did the public consultation process require of you as a participant? Were you compensated for your time?

b) If you have been involved in any public consultation processes in the past, were you satisfied with the outcomes of the process? Why or why not?

- Probes: Did you feel that your input was incorporated into the outcomes of the process? Did you feel that the public consultation process was a good use of your energy and time?

- Based on your experience, which methods create the best opportunity for dialogue? Which are you most comfortable with? Which do you regard as the least valuable?

c) How do you wish to be consulted about access management planning for public lands in southwestern Alberta? In an ideal situation, how would you want to be involved in public consultation? How would you like to be approached and how would you like to contribute?

- Probes: How much time would you be willing to invest in a public consultation process? How do you wish to be involved- focus groups, workbooks, online surveys,

etc? Who should carry out the public consultation process – government agency employees or an external consultant?

d) Is there anything else that you can tell me about your experiences with public consultation processes, or how you wish to be consulted about access management for public lands in southwestern Alberta affect before we wrap up the discussion?

Conclusion

- Final question: are there any other issues you would like to discuss regarding access management for public lands in southwestern Alberta, your past involvement in public participation processes, and how you wish to be involved in public consultation processes in the future?

- Thank participants

- Ensure researcher contact information is available and describe when report will be finished and how they can get access to it

- Mention on line survey and when it will go live

Appendix D: Online survey

Welcome!

Thank you for taking the time to participate in this survey. Taking part in this survey is your opportunity to voice your opinions about recreation access management on public lands in southwestern Alberta. Recreation access management means determining what types of recreation activities happen on a landscape, and where and when those activities take place. Your opinions will be used to create recommendations regarding public consultation for recreation access management planning on public lands in southwestern Alberta. When you complete the survey, you will be given the opportunity to enter a draw to win one of ten cash prizes of $50.

The survey takes about 10-15 minutes to complete, and is best viewed using Internet Explorer. The questions and potential responses contained within this survey are based on the results from three focus groups involving recreation users held in June 2008. During the focus groups, a cross section of motorized and non-motorized recreation users came together and expressed their views on recreation and access management on public lands in southwestern Alberta.

This independent research project has received support from the Social Sciences and Humanities Research Council (SSHRC), the Faculty of Environmental Design at the University of Calgary, and the Miistakis Institute.

All the information you provide in this survey will be completely anonymous and confidential, and will be used for data analysis purposes only. The University of Calgary Conjoint Faculties Research Ethics Board has approved this research study. If you have any questions about the survey, please feel free to contact the researcher via email: rlhaddoc@ucalgary.ca, or call: 403.891.3334.

By agreeing to proceed with this survey, you are indicating that you 1) understand to your satisfaction the information provided to you about your participation in this research project, and 2) agree to participate as a research subject. In no way does this waive your legal rights nor release the investigators, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from this research project at any time. You should feel free to ask for clarification or new information throughout your participation.

Instructions

The survey consists of three parts: the first section is about recreation on public lands in southwestern Alberta; the second section is about your views on public consultation; and the last section is background information.

In order to progress through this survey, please use the following navigation links:

- Click the Next >> button to continue to the next page.
- Click the Previous >> button to return to the previous page.
- Click the Exit the Survey Early >> button if you need to exit the survey.
- Click the Submit >> button to submit your survey.

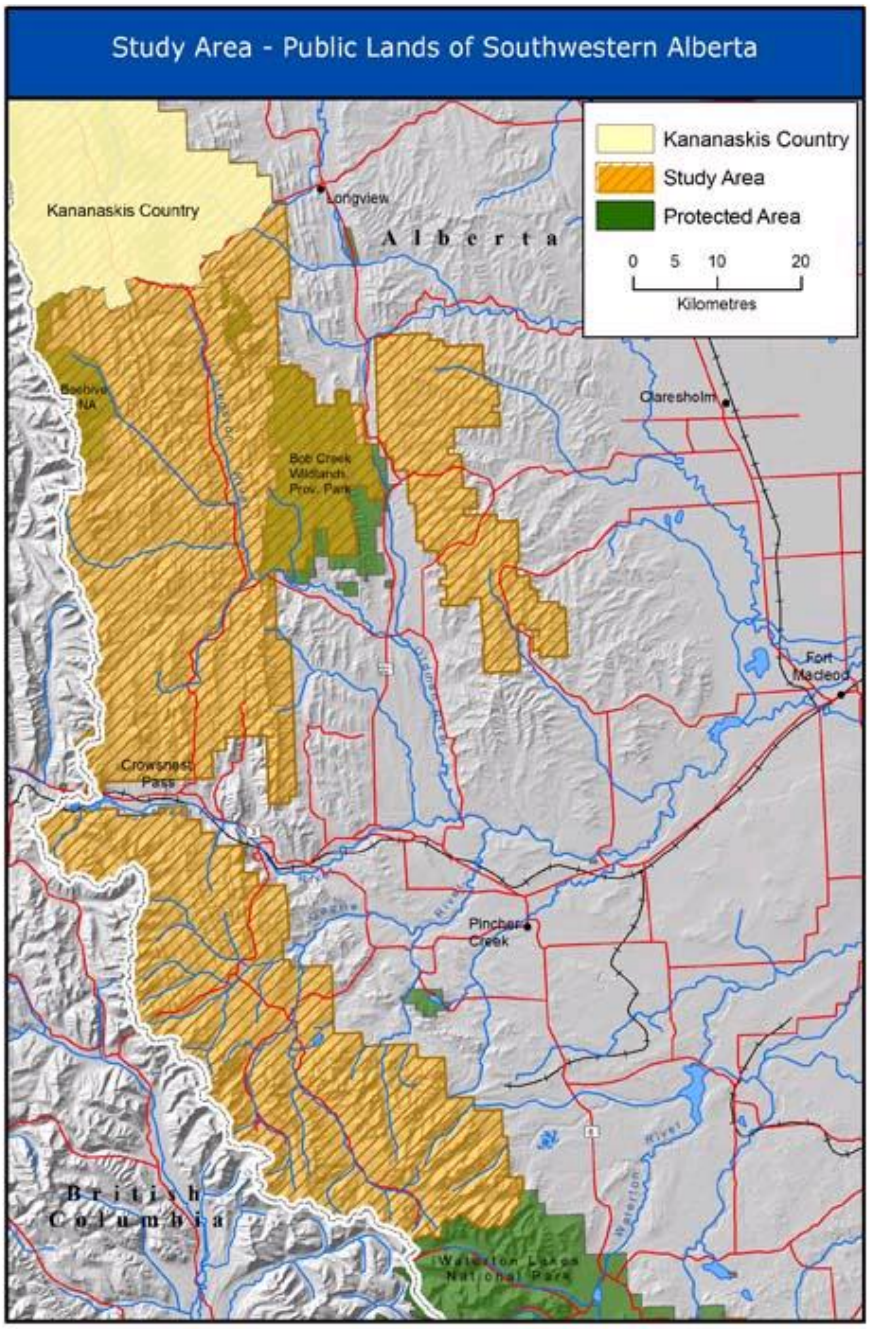
Please call 403.891.3334, or email rlhaddoc@ucalgary.ca, should you have any questions about how to complete the survey.

Section one: Recreation use

1. For the purpose of this study, public lands in southwestern Alberta are defined as public lands from the Porcupine Hills west to the British Columbia border, and from the southern border of Kananaskis Country down to the Waterton National Park boundary. The study area is depicted by the cross-hatched area on the map below. Do you recreate in this area?

- Yes, I recreate on public lands in southwestern Alberta.
- No, I do not recreate on public lands in southwestern Alberta.

Map of the study area:



Section one: Recreation use

2. Approximately how long have you been recreating on public lands in southwestern Alberta? Please select one response.

- I have been recreating on public lands in southwestern Alberta for approximately less than 1 year.
- I have been recreating on public lands in southwestern Alberta for approximately 1-2 years.
- I have been recreating on public lands in southwestern Alberta for approximately 3-5 years.
- I have been recreating on public lands in southwestern Alberta for approximately 6-10 years.
- I have been recreating on public lands in southwestern Alberta for approximately 11-20 years.
- I have been recreating on public lands in southwestern Alberta for approximately over 21 years.
- I am not certain how long I have been recreating on public lands in southwestern Alberta.

Section one: Recreation use

3a) How do you recreate on public lands in southwestern Alberta?

For the following list of recreation activities, please select the approximate number of times a year during which you participate in EACH activity on public lands in southwestern Alberta.

	Never	Less than once a year	Once a year	2-10 times a year	More than 10 times a year
Fishing	☐	☐	☐	☐	☐
Hunting	☐	☐	☐	☐	☐
Hiking	☐	☐	☐	☐	☐
Camping	☐	☐	☐	☐	☐
Riding quads	☐	☐	☐	☐	☐
Riding dirt bikes	☐	☐	☐	☐	☐
Driving off-road trucks (on recreation trails)	☐	☐	☐	☐	☐
Riding snowmobiles	☐	☐	☐	☐	☐
Cross-country skiing	☐	☐	☐	☐	☐
Riding horses	☐	☐	☐	☐	☐
Riding mountain bikes	☐	☐	☐	☐	☐
Climbing	☐	☐	☐	☐	☐
Paddling	☐	☐	☐	☐	☐
Photographing nature	☐	☐	☐	☐	☐
Viewing wildlife	☐	☐	☐	☐	☐

3b) Do you participate in any other activities on public lands in southwestern Alberta NOT included in the list above?

☐ i) Yes, I participate in other activities on public lands in southwestern Alberta not included in the list above.

☐ ii) No, I do not participate in any other activities on public lands in southwestern Alberta not included in the list above.

Section one: Recreation use

3c) Please use the blanks below to list up to three activities, that were NOT included on the previous page, that you participate in on public lands in southwestern Alberta. For each activity that you list, please select the approximate number of times a year during which you participate in that activity on public lands in southwestern Alberta.

	Less than once a year	Once a year	2-10 times a year	More than 10 times a year
i) Activity one				

Please list activity:

	Less than once a year	Once a year	2-10 times a year	More than 10 times a year
ii) Activity two				

Please list activity:

	Less than once a year	Once a year	2-10 times a year	More than 10 times a year
iii) Activity three				

Please list activity:

Section one: Recreation use

4a) Do you belong to an organized recreation use group? Please select one response.

- Yes, I belong to an organized recreation group.
- No, I do not belong to an organized recreation use group.

Section one: Recreation use

4b) Please list the name(s) of the recreation use organization(s) to which you belong.

Organization name:

Organization name:

Organization name:

Organization name:

Organization name:

Section one: Recreation use

5a) Since you began recreating on public lands in southwestern Alberta, how would you rate the quality of your experience? Please select the best response.

- The overall quality of my experience has increased/improved.
- The overall quality of my experience has remained the same/unchanged.
- The overall quality of my experience has decreased/declined.

5b) Please briefly explain your choice.

Section one: Recreation use

6a) The following is a series of statements regarding access management on public lands in southwestern Alberta. For each statement, please select the number which best indicates your level of agreement.

	1 - Strongly Disagree	2 - Disagree	3 - Somewhat Disagree	4 - Neither Agree nor Disagree	5 - Somewhat Agree	6 - Agree	7 - Strongly Agree	8 - Do Not Know
Random camping is an important part of the overall quality of my experience on public lands.	☐	☐	☐	☐	☐	☐	☐	☐
It is important to keep public lands open for all types of recreation uses.	☐	☐	☐	☐	☐	☐	☐	☐
It is important to maintain recreation opportunities for future generations.	☐	☐	☐	☐	☐	☐	☐	☐
Recreation use on public lands in southwestern Alberta is increasing.	☐	☐	☐	☐	☐	☐	☐	☐
Overall, recreation users demonstrate responsible use of public lands.	☐	☐	☐	☐	☐	☐	☐	☐
Education is the best way to encourage responsible use of public lands.	☐	☐	☐	☐	☐	☐	☐	☐
There are enough rules, regulations and fines to guide responsible use of public lands.	☐	☐	☐	☐	☐	☐	☐	☐
There is enough enforcement to encourage responsible use of public lands.	☐	☐	☐	☐	☐	☐	☐	☐

Section one: Recreation use

6b) The following is a series of statements regarding access management on public lands in southwestern Alberta. For each statement, please select the number which best indicates your level of agreement.

Remember that for the purpose of this survey, access management means determining what types of recreation activities happen on a landscape, and where and when those activities take place.

	1 - Strongly Disagree	2 - Disagree	3 - Somewhat Disagree	4 - Neither Agree nor Disagree	5 - Somewhat Agree	6 - Agree	7 - Strongly Agree	8 - Do Not Know
There is a need for staging areas, and bathroom and garbage facilities on public lands in southwestern Alberta.	☐	☐	☐	☐	☐	☐	☐	☐
There is a need to determine what recreation activities are allowed to occur, and where they are allowed to occur, on public lands in southwestern Alberta.	☐	☐	☐	☐	☐	☐	☐	☐
There is a need to separate recreation uses that may be incompatible on public lands in southwestern Alberta.	☐	☐	☐	☐	☐	☐	☐	☐
There is a need for a formal access management plan for public lands in southwestern Alberta.	☐	☐	☐	☐	☐	☐	☐	☐
The current level of impacts from recreation on public lands in southwestern Alberta is acceptable.	☐	☐	☐	☐	☐	☐	☐	☐
The current level of impacts from industrial activities, such as logging and oil and gas development, is acceptable.	☐	☐	☐	☐	☐	☐	☐	☐

Section one: Recreation use

7a) During recent visits to recreate on public lands in southwestern Alberta, have you observed impacts from recreation activities on public lands? Please select one response.

- Yes, I have observed impacts from recreation activities on public lands in southwestern Alberta.
- No, I have not observed impacts from recreation activities on public lands in southwestern Alberta.
- I am not certain.

Section one: Recreation use

7b) Please describe the nature of the impacts you observed.

7c) Please rate how the impacts from recreation activities that you observed on public lands affected your recreation experience. Please select the best response.

- The impacts from recreation activities that I observed did not impact my experience.
- I am uncertain how the impacts from recreation activities that I observed affected my experience.
- The impacts from recreation activities that I observed detracted somewhat from my experience.
- The impacts from recreation activities that I observed detracted greatly from my experience.

Section two: Public consultation

Public consultation is an important component of any access management decisions for public lands in southwestern Alberta. Public consultation is a way to provide input or feedback, and to gain recognition of that feedback. Examples of types of public consultation include: online surveys, random sample phone calls, open houses and public meetings.

1a) What types of land-use public consultation have you participated in? Please select all that apply.

- I have not participated in any type of land-use public consultation.
- I attended an open house.
- I attended a public meeting.
- I wrote a letter expressing my opinion.
- I responded to a paper survey.
- I responded to an online survey.
- I responded to a random phone survey.
- I sat on an advisory committee.
- I participated in another type of public land-use consultation (please list below).

Please list other type of public consultation here:

Section two: Public consultation

1b) Thinking about the past consultation processes that you have been involved in, please describe what worked best for you.

1c) Thinking about the past consultation processes that you have been involved in, please describe what did not work well for you.

Section two: Public consultation

2. Using a 1 to 5 point scale, where 1 means “least desirable” and 5 means “most desirable”, please select how you feel about using the following types of public consultation for access management planning for public lands in southwestern Alberta.

	1 – Least desirable	2 – Less desirable	3 – Neutral	4 – More desirable	5 – Most desirable
Writing a letter					
Attending open houses					
Attending public meetings					
Attending meetings with decision-makers					
Attending meetings with decision-makers on the land					
Completing paper surveys					
Completing online surveys					
Completing phone surveys					
Other (please list below)					

Please list the other type of public consultation here:

Section two: Public consultation

3. How do you wish to be notified of opportunities for public involvement? Please select all appropriate responses.

- I would like to read a notice in a local newspaper.
- I would like to hear an announcement on a local radio station.
- I would like to see an advertisement on a local television station.
- I would like to find a posting on a government website.
- I would like to be notified by another means - please list below.

Please list the other way that you wish to be notified here:

4. How do you wish to receive feedback after you have been involved in a consultation?

Section two: Public consultation

5. Do you have anything you would like to add regarding public consultation for access management?

Section three: Background information

We would now like to gather some personal information about you. Please remember that all of your answers are anonymous and confidential.

1. What is your sex?

- I am male.
- I am female.

2. What is your age? Please choose one:

- I am between 18-29 years of age.
- I am between 30-39 years of age.
- I am between 40-49 years of age.
- I am between 50-59 years of age.
- I am between 60-69 years of age.
- I am between 70-79 years of age.
- I am 80 years of age or older.

3. What is your postal code?

4. Approximately how long have you lived at your current residence?

- I have lived at my current residence between approximately 1-2 years.
- I have lived at my current residence between approximately 3-5 years.
- I have lived at my current residence between approximately 6-10 years.
- I have lived at my current residence between approximately 11-20 years.
- I have lived at my current residence approximately 21 or more years.

Section four: Thank you

Once you click the “Done” or “Submit” button, your survey response will be submitted.

Thank you for completing a survey, and for sharing your views on public consultation for access management in southwestern Alberta! Your opinions will be used to create recommendations regarding public consultation for recreation access management planning on public lands in southwestern Alberta.

If you wish to enter the draw for one of 10 cash prizes of $50, you will be given the opportunity to do so upon exiting this survey. If you opt to enter the draw for a prize, your contact details will not be associated with your survey responses and your anonymity will be maintained. The draw for the survey prizes will take place in December, and the results of the survey will be made available in the spring of 2009.

Thanks again!

Appendix E: Detailed results tables

Table 1: Frequency distributions for demographic variables

Respondent Demographic	Frequency	Percent	Valid Percent
Sex			
Male	652	69	80.1
Female	162	17.1	19.9
Total	814	86.1	100
No Response	131	13.9	
Total	945	100	
Age			
18-29	111	11.7	13.6
30-39	181	19.2	22.2
40-49	190	20.1	23.3
50-59	196	20.7	24
60 and over	139	14.7	17
Total	817	86.5	100
No Response	128	13.5	
Total	945	100	
Large City/Other			
Large City	316	33.4	41.3
Other	450	47.6	58.7
Total	766	81.1	100
No Response	179	18.9	
Total	945	100	
Recreate in Study Area			
Yes	838	88.7	88.7
No	107	11.3	11.3
Total	945	100	100
No Response	0	0	
Total	945	100	

Respondent Demographic	Frequency	Percent	Valid Percent
Recreation Tenure			
Less than 1 year	20	2.1	2.4
1-2 years	48	5.1	5.9
3-5 years	98	10.4	12
6-10 years	121	12.8	14.8
11-20 years	160	16.9	19.6
Over 21 years	371	39.3	45.4
Total	818	86.6	100
No Response	127	13.4	
Total	945	100	
Motorized/Non-motorized Users			
Motorized Users	554	58.6	58.6
Non-Motorized Users	391	41.4	41.4
Total	945	100	100
No Response	0	0	
Total	945	100	
Membership to Organized Recreation Use Group			
Yes	390	41.3	48
No	423	44.8	52
Total	813	86	100
No Response	132	14	
Total	945	100	

Table 2: Frequency distribution for change in recreation quality

Change in recreation quality	Frequency	Percent	Valid Percent
Increased/Improved	115	12.2	14.5
Same/Unchanged	250	26.5	31.5
Decreased/Declined	428	45.3	54
Total	793	83.9	100
No Response	152	16.1	
Total	945	100	

Table 3: Frequency distributions for access management statements

Statement	Frequency	Percent	Valid Percent
Random camping is an important part of the overall quality of my experience on public lands.			
Strongly Disagree	103	10.9	13.3
Disagree	69	7.3	8.9
Somewhat Disagree	44	4.7	5.7
Neither Agree nor Disagree	51	5.4	6.6
Somewhat Agree	76	8	9.8
Agree	129	13.7	16.7
Strongly Agree	301	31.9	38.9
Total	773	81.8	100
No Response	172	18.2	
Total	945	100	
It is important to keep public lands open for all types of recreation uses.			
Strongly Disagree	118	12.5	15.1
Disagree	96	10.2	12.3
Somewhat Disagree	74	7.8	9.5
Neither Agree nor Disagree	10	1.1	1.3
Somewhat Agree	97	10.3	12.4
Agree	102	10.8	13.1
Strongly Agree	283	29.9	36.3
Total	780	82.5	100
No Response	165	17.5	
Total	945	100	
It is important to maintain recreation opportunities for future generations.			
Strongly Disagree	4	0.4	0.5
Disagree	1	0.1	0.1
Somewhat Disagree	2	0.2	0.3
Neither Agree nor Disagree	6	0.6	0.8
Somewhat Agree	15	1.6	1.9
Agree	99	10.5	12.8
Strongly Agree	647	68.5	83.6
Total	774	81.9	100
No Response	171	18.1	
Total	945	100	

Statement	Frequency	Percent	Valid Percent
Recreation use on public lands in southwestern Alberta is increasing.			
Strongly Disagree	17	1.8	2.3
Disagree	17	1.8	2.3
Somewhat Disagree	13	1.4	1.8
Neither Agree nor Disagree	23	2.4	3.1
Somewhat Agree	59	6.2	8
Agree	207	21.9	28.1
Strongly Agree	401	42.4	54.4
Total	737	78	100
No Response	208	22	
Total	945	100	
Overall, recreation users demonstrate responsible use of public lands.			
Strongly Disagree	77	8.1	9.9
Disagree	129	13.7	16.6
Somewhat Disagree	132	14	16.9
Neither Agree nor Disagree	42	4.4	5.4
Somewhat Agree	183	19.4	23.5
Agree	163	17.2	20.9
Strongly Agree	53	5.6	6.8
Total	779	82.4	100
No Response	166	17.6	
Total	945	100	
Education is the best way to encourage responsible use of public lands.			
Strongly Disagree	27	2.9	3.5
Disagree	51	5.4	6.6
Somewhat Disagree	44	4.7	5.7
Neither Agree nor Disagree	29	3.1	3.8
Somewhat Agree	157	16.6	20.3
Agree	189	20	24.5
Strongly Agree	276	29.2	35.7
Total	773	81.8	100
No Response	172	18.2	
Total	945	100	

Statement	Frequency	Percent	Valid Percent
There are enough rules, regulations and fines to guide responsible use of public lands.			
Strongly Disagree	133	14.1	17.6
Disagree	110	11.6	14.6
Somewhat Disagree	106	11.2	14.1
Neither Agree nor Disagree	37	3.9	4.9
Somewhat Agree	105	11.1	13.9
Agree	133	14.1	17.6
Strongly Agree	130	13.8	17.2
Total	754	79.8	100
No Response	191	20.2	
Total	945	100	
There is enough enforcement to encourage responsible use of public lands.			
Strongly Disagree	286	30.3	37.1
Disagree	164	17.4	21.3
Somewhat Disagree	110	11.6	14.3
Neither Agree nor Disagree	39	4.1	5.1
Somewhat Agree	74	7.8	9.6
Agree	59	6.2	7.7
Strongly Agree	39	4.1	5.1
Total	771	81.6	100
No Response	174	18.4	
Total	945	100	
There is a need for staging areas, and bathroom and garbage facilities on public lands in southwestern Alberta.			
Strongly Disagree	15	1.6	2
Disagree	36	3.8	4.7
Somewhat Disagree	32	3.4	4.2
Neither Agree nor Disagree	36	3.8	4.7
Somewhat Agree	131	13.9	17.1
Agree	272	28.8	35.6
Strongly Agree	242	25.6	31.7
Total	764	80.8	100
No Response	181	19.2	
Total	945	100	

Statement	Frequency	Percent	Valid Percent
There is a need to determine what recreation activities are allowed to occur, and where they are allowed to occur, on public lands in southwestern Alberta.			
Strongly Disagree	33	3.5	4.3
Disagree	27	2.9	3.5
Somewhat Disagree	31	3.3	4
Neither Agree nor Disagree	31	3.3	4
Somewhat Agree	112	11.9	14.6
Agree	218	23.1	28.5
Strongly Agree	314	33.2	41
Total	766	81.1	100
No Response	179	18.9	
Total	945	100	
There is a need to separate recreation uses that may be incompatible on public lands in southwestern Alberta.			
Strongly Disagree	34	3.6	4.5
Disagree	51	5.4	6.8
Somewhat Disagree	47	5	6.2
Neither Agree nor Disagree	55	5.8	7.3
Somewhat Agree	104	11	13.8
Agree	188	19.9	24.9
Strongly Agree	275	29.1	36.5
Total	754	79.8	100
No Response	191	20.2	
Total	945	100	
There is a need for a formal access management plan for public lands in southwestern Alberta.			
Strongly Disagree	27	2.9	3.6
Disagree	35	3.7	4.6
Somewhat Disagree	38	4	5
Neither Agree nor Disagree	65	6.9	8.6
Somewhat Agree	106	11.2	14
Agree	196	20.7	26
Strongly Agree	288	30.5	38.1
Total	755	79.9	100
No Response	190	20.1	
Total	945	100	

Statement	Frequency	Percent	Valid Percent
The current level of impacts from recreation on public lands in southwestern Alberta is acceptable.			
Strongly Disagree	173	18.3	23.2
Disagree	115	12.2	15.4
Somewhat Disagree	124	13.1	16.6
Neither Agree nor Disagree	70	7.4	9.4
Somewhat Agree	109	11.5	14.6
Agree	105	11.1	14.1
Strongly Agree	49	5.2	6.6
Total	745	78.8	100
No Response	200	21.2	
Total	945	100	
The current level of impacts from industrial activities, such as logging and oil and gas development, is acceptable.			
Strongly Disagree	222	23.5	29.8
Disagree	135	14.3	18.1
Somewhat Disagree	142	15	19.1
Neither Agree nor Disagree	78	8.3	10.5
Somewhat Agree	69	7.3	9.3
Agree	79	8.4	10.6
Strongly Agree	20	2.1	2.7
Total	745	78.8	100
No Response	200	21.2	
Total	945	100	

Table 4: Frequency distribution for recreation effects/influence on recreation experience

Effects/influence on recreation experience	Frequency	Percent	Valid Percent
Did not impact experience	73	7.7	11.8
Detracted somewhat from my experience	306	32.4	49.4
Detracted greatly from my experience	240	25.4	38.8
Total	619	65.5	100
No Response	326	34.5	
Total	945	100	

Table 5: Frequency distributions for desired public consultation types

Type of Public Consultation	Frequency	Percent	Valid Percent
Writing a letter			
Least desirable	118	12.5	14.8
Less desirable	155	16.4	19.4
Neutral	268	28.4	33.5
More desirable	209	22.1	26.1
Most desirable	50	5.3	6.3
Total	800	84.7	100
No Response	145	15.3	
Total	945	100	
Attending open houses			
Least desirable	41	4.3	5.1
Less desirable	103	10.9	12.9
Neutral	232	24.6	29
More desirable	357	37.8	44.6
Most desirable	68	7.2	8.5
Total	801	84.8	100
No Response	144	15.2	
Total	945	100	
Attending public meetings			
Least desirable	32	3.4	4
Less desirable	96	10.2	12.1
Neutral	189	20	23.7
More desirable	388	41.1	48.7
Most desirable	91	9.6	11.4
Total	796	84.2	100
No Response	149	15.8	
Total	945	100	

Type of Public Consultation	Frequency	Percent	Valid Percent
Attending meetings with decision-makers			
Least desirable	23	2.4	2.8
Less desirable	41	4.3	5.1
Neutral	123	13	15.2
More desirable	334	35.3	41.3
Most desirable	288	30.5	35.6
Total	809	85.6	100
No Response	136	14.4	
Total	945	100	
Attending meetings with decision-makers on the land			
Least desirable	26	2.8	3.3
Less desirable	51	5.4	6.4
Neutral	149	15.8	18.7
More desirable	277	29.3	34.8
Most desirable	293	31	36.8
Total	796	84.2	100
No Response	149	15.8	
Total	945	100	
Completing paper surveys			
Least desirable	65	6.9	8.1
Less desirable	162	17.1	20.3
Neutral	276	29.2	34.6
More desirable	242	25.6	30.3
Most desirable	53	5.6	6.6
Total	798	84.4	100
No Response	147	15.6	
Total	945	100	

Type of Public Consultation	Frequency	Percent	Valid Percent
Completing online surveys			
Least desirable	15	1.6	1.9
Less desirable	52	5.5	6.4
Neutral	191	20.2	23.6
More desirable	354	37.5	43.8
Most desirable	197	20.8	24.4
Total	809	85.6	100
No Response	136	14.4	
Total	945	100	
Completing phone surveys			
Least desirable	178	18.8	22.3
Less desirable	195	20.6	24.4
Neutral	201	21.3	25.1
More desirable	172	18.2	21.5
Most desirable	54	5.7	6.8
Total	800	84.7	100
No Response	145	15.3	
Total	945	100	

Table 6.1: Descriptive results for age

	Group	Mean	Standard Deviation	n
Beliefs	1 18-29 years old	4.3309	1.433	101
	2 30-39 years old	4.353	1.36629	158
	3 40-49 years old	4.0574	1.49164	172
	4 50-59 years old	3.9474	1.37063	186
	5 60 and over years old	3.372	1.38053	122
	Total	4.0171	1.44304	739
	Group	**Mean**	**Standard Deviation**	**n**
Management	1 18-29 years old	5.288	1.2832	101
	2 30-39 years old	5.2917	1.22159	158
	3 40-49 years old	5.6124	1.07392	172
	4 50-59 years old	5.8123	1.08541	186
	5 60 and over years old	6.1913	0.70854	122
	Total	5.6454	1.13413	739

Table 6.2: ANOVA & Tukey HSD results for age

	Source	F	(df)	p
Overall (Management and Beliefs)				
	Age	8.917	8, 1466	≤0.0004
Univariate Results				
	Beliefs	10.041	4, 734	≤0.0004
	Management	15.604	4, 734	≤0.0004
Tukey HSD Result				
	Beliefs			
	1-5			≤0.0004
	2-5			≤0.0004
	3-5			≤0.0004
	4-5			0.004
	Management			
	1-4			0.001
	1-5			≤0.0004
	2-4			≤0.0004
	2-5			≤0.0004
	3-5			≤0.0004
	4-5			0.025

Table 7.1: Descriptive results for membership

	Group	Mean	Standard Deviation	n
Beliefs	1 Yes	4.3087	1.37473	374
	2 No	3.7919	1.45314	390
	Total	4.0449	1.4378	764
	Group	**Mean**	**Standard Deviation**	**n**
Management	1 Yes	5.4525	1.19486	374
	2 No	5.7863	1.07184	390
	Total	5.6229	1.14522	764

Table 7.2: ANOVA results for membership

	Source	F	(df)	p
Overall (Beliefs and Management)				
	Membership	14.522	2, 761	≤0.0004
Univariate Results				
	Beliefs	25.45	1, 762	≤0.0004
	Management	16.548	1, 762	≤0.0004

Table 8.1: Descriptive results for motorized/non-motorized users

	Group	Mean	Standard Deviation	n
Beliefs	0 Non-motorized	3.3292	1.25717	401
	1 Motorized	4.823	1.22077	366
	Total	4.042	1.44667	767
	Group	**Mean**	**Standard Deviation**	**n**
Management	0 Non-motorized	6.1108	0.78761	401
	1 Motorized	5.084	1.25158	366
	Total	5.6208	1.15486	767

Table 8.2: ANOVA results for motorized/non-motorized users

	Source	F	(df)	p
Overall (Beliefs and Management)				
	Motorized	174.600	2, 764	≤0.0004
Univariate Results	**Beliefs**	277.73	1, 765	≤0.0004
	Management	188.22	1, 765	≤0.0004

Table 9.1: Descriptive results for residence

	Group	Mean	Standard Deviation	n
Beliefs	1 Calgary and Edmonton	4.1235	1.32083	284
	2 Other	3.9611	1.52625	419
	Total	4.0267	1.448	703
	Group	**Mean**	**Standard Deviation**	**n**
Management	1 Calgary and Edmonton	5.5543	1.18758	284
	2 Other	5.6396	1.15665	419
	Total	5.6051	1.16916	703

Table 9.2: ANOVA results for residence

	Source	F	(df)	p
Overall (Beliefs and Management)				
	Residence	1.092	2, 700	0.336
Univariate Results	**Beliefs**	2.133	1, 701	0.145
	Management	.902	1, 701	0.343

Table 10.1: Descriptive statistics for gender

	Group	Mean	Standard Deviation	n
Beliefs	1 Male	4.0559	1.41351	537
	2 Female	3.3981	1.392	144
	Total	3.9168	1.4334	681
	Group	**Mean**	**Standard Deviation**	**n**
Management	1 Male	5.7921	0.86513	537
	2 Female	6.151	0.73578	144
	Total	5.868	0.85166	681

Table 10.2: ANOVA results for gender

	Source	F	(df)	p
Overall (Management and Beliefs)	**Sex**	15.834	2, 678	≤0.0004
Univariate Results				
	Beliefs	24.749	1, 679	≤0.0004
	Management	20.761	1, 679	≤0.0004

Table 11.1: Descriptive results for tenure

	Group	Mean	Standard Deviation	n
Beliefs	3 Less than one year – 5 years	4.4499	1.38401	150
	5 Six – 20 years	3.8172	1.44313	262
	6 Over twenty-one years	4.0395	1.4225	342
	Total	4.0439	1.43805	754
	Group	**Mean**	**Standard Deviation**	**n**
Management	3 Less than one year – 5 years	5.4728	1.08823	150
	5 Six – 20 years	5.8012	0.99798	262
	6 Over twenty-one years	5.5712	1.21714	342
	Total	5.6315	1.12566	754

Table 11.2: ANOVA & Tukey HSD results for tenure

	Source	F	(df)	p
Overall (Beliefs and Management)				
	Tenure	5.505	4, 1500	≤0.0004
Univariate Result				
	Beliefs	9.441	2, 751	≤0.0004
	Management	5.013	2, 751	0.007
Tukey HSD Result				
	Beliefs			
	3-5			≤0.0004
	3-6			0.009
	Management			
	3-5			0.012
	5-6			0.034

Table 12.1: Descriptive results for change in recreation quality

	Group	Mean	Standard Deviation	n
Beliefs	1 Increased/improved	4.8435	1.15933	110
	2 Same/unchanged	4.5291	1.20684	213
	3 Decreased/diminished	3.4855	1.45245	212
	Total	4.1802	1.42019	535
	Group	**Mean**	**Standard Deviation**	**n**
Management	1 Increased/improved	5.4705	1.1939	110
	2 Same/unchanged	5.4515	1.11777	213
	3 Decreased/diminished	5.7948	1.14409	212
	Total	5.5914	1.15387	535

Table 12.2: ANOVA & Tukey HSD results for change in recreation quality

	Source	F	(df)	p
Overall (Management and Beliefs)				
	Change in Recreation Quality	25.731	4, 1062	≤0.0004
Univariate Result				
	Beliefs	52.183	2, 532	≤0.0004
	Management	5.558	2, 532	0.004
Tukey HSD Result				
	Beliefs			
	1-3			≤0.0004
	2-3			≤0.0004
	Management			
	1-3			0.043
	2-3			0.006

Table 13: Kruskal-Wallis & multiple comparisons results for effects & influence on recreation quality

	1=Did not impact		2=Detracted somewhat		3=Detracted greatly				
Outcome	**Mean Rank**	**n**	**Mean Rank**	**n**	**Mean Rank**	**n**	**H(x^2)**	**(df)**	**p**
Beliefs	520.89	73	344.38	305	199.13	239	206.065	2	≤0.0004
Management	137.71	73	278.83	298	376.72	225	114.924	2	≤0.0004
Multiple Comparisons Results									
Beliefs									
1 -2									<0.05
1 - 3									<0.05
2 - 3									<0.05
Management									
1 -2									<0.05
1 - 3									<0.05
2 - 3									<0.05

Table 14.1: Chi-square results for age vs. past public consultation specifics

	1=18-29		2=30-39		3=40-49		4=50-59		5=60+				
Outcome	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**x^2**	**(df)**	**p**
Have not attended an open house	97	87.4	135	74.6	133	70	123	62.8	84	60.4	28.758	4	≤0.0004
Attended an open house	14	12.6	46	25.4	57	30	73	37.2	55	39.6			
	1 = 18-29		**2 = 30=39**		**3=40-49**		**4=50-59**		**5=60+**				
	n	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**x^2**	**(df)**	**p**
Have not attended a public meeting	83	74.8	129	71.3	118	62.1	123	62.8	75	54	16.246	4	0.003
Have attended a public meeting	28	25.2	52	28.7	72	37.9	73	37.2	64	46			
	1 = 18-29		**2 = 30=39**		**3=40-49**		**4=50-59**		**5=60+**				
	n	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**x^2**	**(df)**	**p**
Have not wrote a letter	89	80.2	131	72.4	131	68.9	127	64.8	77	55.4	20.287	4	≤0.0004
Wrote a letter	22	19.8	50	27.6	59	31.1	69	35.2	62	44.6			
	1 = 18-29		**2 = 30=39**		**3=40-49**		**4=50-59**		**5=60+**				
	n	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**x^2**	**(df)**	**p**
Have not responded to a paper survey	97	87.4	151	83.4	160	84.2	148	75.5	103	74.1	12.809	4	0.012
Have responded to a paper survey	14	12.6	30	16.6	30	15.8	48	24.5	36	25.9			

	1 = 18-29		**2 = 30=39**		**3=40-49**		**4=50-59**		**5=60+**				
Outcome	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**x^2**	**(df)**	**p**
Have not responded to a phone survey	108	97.3	167	92.3	180	94.7	176	89.8	122	87.8	11.036	4	0.026
Have responded to a phone survey	3	2.7	14	7.7	10	5.3	20	10.2	17	12.2			
	1 = 18-29		**2 = 30=39**		**3=40-49**		**4=50-59**		**5=60+**				
	n	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**x^2**	**(df)**	**p**
Have not sat on an advisory committee	106	95.5	164	90.6	176	92.6	165	84.2	119	85.6	14.397	4	0.006
Have sat on an advisory committee	5	4.5	17	9.4	14	7.4	31	15.8	20	14.4			

Table 14.2: Kruskal-Wallis results for age vs. desirability of public consultation types

	1=18-29		2=30-39		3=40-49		4=50-59		5=60+				
Outcome	**Mean Rank**	**n**	**Mean Rank**	**n**	**Mean Rank**	**n**	**Mean Rank**	**n**	**Mean Rank**	**n**	**H(x^2)**	**(df)**	**p**
Writing a letter	379.2	107	331.61	175	397.99	190	434.5	189	434.9	129	25.338	4	≤0.0004
Attending meetings with decision-makers on the land	401.23	107	398.96	173	350.3	186	411	189	413.2	130	10.065	4	0.039
Completing online surveys	455.45	110	430.76	178	408.97	186	379.2	193	330.1	132	26.411	4	≤0.0004

Table 14.3 Mann-Whitney U results for age vs. desirability of public consultation types

Outcome	**Age Group**	**z**	**p value**	**Bonferroni adjusted p value**
Writing a letter	**2 - 3**	-2.918	0.004	0.016
	2 - 4	-4.341	≤0.0004	≤0.0016
	2 - 5	-3.963	≤0.0004	≤0.0016
Attending meetings with decision-makers on the land	**3 - 4**	-2.717	0.007	0.028
	3 - 5	-2.523	0.012	0.048
Completing online surveys	**1 - 4**	-2.919	0.004	0.016
	1 - 5	-4.439	≤0.0004	≤0.0016
	2 - 5	-4.108	≤0.0004	≤0.0016
	3 - 5	-3.115	0.002	0.008

Table 14.4: Chi-square results for age vs. desired types of notification

	1 = 18-29		2 = 30=39		3=40-49		4=50-59		5=60+				
Outcome	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**x^2**	**(df)**	**p**
No desire for notification on local radio station	33	29.7	80	44.2	84	44.2	98	50	74	53.2	16.324	4	0.003
Desire for notification on local radio station	78	70.3	101	55.8	106	55.8	98	50	65	46.8			
	1 = 18-29		**2 = 30=39**		**3=40-49**		**4=50-59**		**5=60+**				
Outcome	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**x^2**	**(df)**	**p**
No desire for notification on government website	54	48.6	103	56.9	115	60.5	130	66.3	96	69.1	14.542	4	0.006
Desire for notification on government website	57	51.4	78	43.1	75	39.5	66	33.7	43	30.9			

Table 14.5: Chi-square results for age vs. desired types of feedback

	1 = 18-29		**2 = 30=39**		**3=40-49**		**4=50-59**		**5=60+**				
Outcome	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**N**	**(%)**	**x^2**	**(df)**	**p**
No desire for specific feedback	106	95.5	168	92.8	177	93.2	168	85.7	121	87.1	13.147	4	0.011
Desire for specific feedback	5	4.5	13	7.2	13	6.8	28	14.3	18	12.9			
	1 = 18-29		**2 = 30=39**		**3=40-49**		**4=50-59**		**5=60+**				
Outcome	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**N**	**(%)**	**x^2**	**(df)**	**p**
No desire for feedback by media	103	92.8	176	97.2	175	92.1	175	89.3	133	95.7	11.234	4	0.024
Desire for feedback by media	8	7.2	5	2.8	15	7.9	21	10.7	6	4.3			

Table 15.1: Chi-square results for membership vs. past public consultation

	1 – Group Member		2 – Non-member		x^2	(df)	p
Outcome	**n**	**(%)**	**n**	**(%)**			
Never participated in public consultation	96	24.6	161	38.1	16.97	1	≤0.0004
Participated in public consultation	294	75.4	262	61.9			

Table 15.2: Chi-square results for membership vs. past public consultation specifics

	1 – Group Member		2 – Non-member		x^2	(df)	p
Outcome	**n**	**(%)**	**n**	**(%)**			
Have not attended an open house	259	66.4	314	74.2	5.966	1	0.015
Attended an open house	131	33.6	109	25.8			
	1 – Group Member		**2 – Non-member**		**x^2**	**(df)**	**p**
Outcome	**n**	**(%)**	**n**	**(%)**			
Have not attended a public meeting	230	59	295	69.7	10.281	1	0.001
Have attended a public meeting	160	41	128	30.3			
	1 – Group Member		**2 – Non-member**		**x^2**	**(df)**	**p**
Outcome	**n**	**(%)**	**n**	**(%)**			
Have not wrote a letter	237	60.8	319	75.4	20.13	1	≤0.0004
Wrote a letter	153	39.2	104	24.6			

	1 – Group Member		2 – Non-member		x^2	(df)	p
Outcome	**n**	**(%)**	**n**	**(%)**			
Have not responded to a paper survey	295	75.6	361	85.3	12.257	1	≤0.0004
Have responded to a paper survey	95	24.4	62	14.7			
	1 – Group Member		**2 – Non-member**		**x^2**	**(df)**	**p**
Outcome	**n**	**(%)**	**n**	**(%)**			
Have not responded to an online survey	153	39.2	244	57.7	27.652	1	≤0.0004
Have responded to an online survey	237	60.8	179	42.3			
	1 – Group Member		**2 – Non-member**		**x^2**	**(df)**	**p**
Outcome	**n**	**(%)**	**n**	**(%)**			
Have not sat on an advisory committee	336	86.2	391	92.4	8.463	1	0.004
Have sat on an advisory committee	54	13.8	32	7.6			

Table 15.3: Mann-Whitney U results for membership vs. desirability of public consultation types

Outcome	1 – Group Member Mean Rank	n	2 – Non-member Mean Rank	n	z	p
Attending open houses	392.02	359	346.11	377	-3.116	0.002
Attending public meetings	389.18	354	344.23	377	-3.092	0.002
Attending meetings with decision-makers	400.97	360	345.81	384	-3.737	≤0.0004
Attending meetings with decision-makers on the land	386.09	356	346.93	375	-2.645	0.008

Table 15.4: Chi-square results for membership vs. desired types of notification

	1 – Group Member		2 – Non-member		x^2	(df)	p
Outcome	**n**	**(%)**	**n**	**(%)**			
No desire for notification on local radio station	173	44.4	222	52.5	5.36	1	0.021
Desire for notification on local radio station	217	55.6	201	47.5			

Table 15.5: Chi-square results for membership vs. desired types of feedback

	1 – Group Member		2 – Non-member		x^2	(df)	p
Outcome	**n**	**(%)**	**n**	**(%)**			
No desire for feedback by mail	330	84.6	379	89.6	4.516	1	0.034
Desire for feedback by mail	60	15.4	44	10.4			
	1 – Group Member		**2 – Non-member**		**x^2**	**(df)**	**p**
Outcome	**n**	**(%)**	**n**	**(%)**			
No desire for feedback by club communication	374	95.9	418	98.8	6.878	1	0.009
Desire for feedback by club communication	16	4.1	5	1.2			
	1 – Group Member		**2 – Non-member**		**x^2**	**(df)**	**p**
Outcome	**n**	**(%)**	**n**	**(%)**			
No desire for feedback by media	374	95.9	389	92	5.444	1	0.02
Desire for feedback by media	16	4.1	34	8			

Table 16.1: Chi-square results for motorized/non-motorized users vs. past public consultation

	1 – Non-motorized		2 - Motorized				
Outcome	**n**	**(%)**	**n**	**(%)**	**x^2**	**(df)**	**p**
Never participated in public consultation	200	36.1	110	28.1	6.602	1	0.01
Participated in public consultation	354	63.9	281	71.9			

Table 16.2: Chi-square results for motorized/non-motorized users vs. past public consultation specifics

	1 – Non-motorized		2 - Motorized				
Outcome	**n**	**(%)**	**n**	**(%)**	**x^2**	**(df)**	**p**
Have not attended a public meeting	396	71.5	249	63.7	6.432	1	0.011
Have attended a public meeting	158	28.5	142	36.3			
	1 – Non-motorized		**2 – Motorized**				
Outcome	**n**	**(%)**	**n**	**(%)**	**x^2**	**(df)**	**p**
Have not responded to a paper survey	478	86.3	305	78	11.054	1	0.001
Have responded to a paper survey	76	13.7	86	22			
	1 – Non-motorized		**2 - Motorized**				
Outcome	**n**	**(%)**	**n**	**(%)**	**x^2**	**(df)**	**p**
Have not responded to an online survey	335	60.5	168	43	28.205	1	≤0.0004
Have responded to an online survey	219	39.5	223	57			

Table 16.3: Mann-Whitney U results for motorized/non-motorized users vs. desirability of public consultation types

Outcome	1 – Non-Motorized Mean Rank	n	2 – Motorized Mean Rank	n	z	p
Writing a letter	414.42	448	382.79	352	-1.989	0.047
Completing phone surveys	385.1	449	420.2	351	-2.189	0.029

Table 16.4: Chi-square results for motorized/non-motorized users vs. desired types of notification

	1 – Non-motorized		**2 - Motorized**				
Outcome	**n**	**(%)**	**n**	**(%)**	**x^2**	**(df)**	**p**
No desire for notification in local newspaper	234	42.2	136	34.8	5.348	1	0.021
Desire for notification in local newspaper	320	57.8	255	65.2			
	1 – Non-motorized		**2 - Motorized**				
Outcome	**n**	**(%)**	**n**	**(%)**	**x^2**	**(df)**	**p**
No desire for notification on local radio station	319	57.6	174	44.5	15.716	1	≤0.0004
Desire for notification on local radio station	235	42.4	217	55.5			
	1 – Non-motorized		**2 – Motorized**				
Group	**n**	**(%)**	**n**	**(%)**	**x^2**	**(df)**	**p**
No desire for notification on local TV station	355	64.1	194	49.6	19.696	1	≤0.0004
Desire for notification on local TV station	199	35.9	197	50.4			

	1 – Non-motorized		2 - Motorized				
Outcome	**n**	**(%)**	**n**	**(%)**	**x^2**	**(df)**	**p**
No desire for notification on government website	381	68.8	242	61.9	4.83	1	0.028
Desire for notification on government website	173	31.2	149	38.1			

Table 16.5: Chi-square results for motorized vs. desired types of feedback

	1 – Non-motorized		2 - Motorized				
Outcome	**n**	**(%)**	**n**	**(%)**	**x^2**	**(df)**	**p**
No desire for specific feedback	499	90.1	368	94.1	4.954	1	0.026
Desire for specific feedback	55	9.9	23	5.9			
	1 – Non-motorized		**2 - Motorized**				
Outcome	**n**	**(%)**	**n**	**(%)**	**x^2**	**(df)**	**p**
No desire for feedback by mail	499	90.1	332	84.9	5.757	1	0.016
Desire for feedback by mail	55	9.9	59	15.1			
	1 – Non-motorized		**2 - Motorized**				
Outcome	**n**	**(%)**	**n**	**(%)**	**x^2**	**(df)**	**p**
No desire for feedback by telephone	543	98	371	94.9	7.076	1	0.008
Desire for feedback by telephone	11	2	20	5.1			

Table 17.1: Chi-square results for gender vs. past public consultation specifics

	1 – Male		2 - Female		x^2	(df)	p
Source	**n**	**(%)**	**n**	**(%)**			
Have not responded to an online survey	301	46.2	91	56.2	5.205	1	0.023
Have responded to an online survey	351	53.8	71	43.8			

Table 17.2: Chi-square results for gender vs. desired types of notification

	1 – Male		2 - Female		x^2	(df)	p
Outcome	**n**	**(%)**	**n**	**(%)**			
No desire for notification on local TV station	325	49.8	101	62.3	8.126	1	0.004
Desire for notification on local TV station	327	50.2	61	37.7			

Table 17.3: Mann-Whitney U results for gender vs. desired types of feedback

	1 - Male		2 - Female		x^2	(df)	p
Outcome	**n**	**(%)**	**n**	**(%)**			
No desire for feedback by internet	586	89.9	134	82.7	6.515	1	0.011
Desire for feedback by internet	66	10.1	28	17.3			
	1 - Male		**2 - Female**		x^2	**(df)**	**p**
Outcome	**n**	**(%)**	**n**	**(%)**			
No desire for feedback by media	620	95.1	139	85.8	17.773	1	<0.001
Desire for feedback by media	32	4.9	23	14.2			

Table 18.1: Chi-square results for tenure vs. past public consultation

	1 – <1 year		2 – 1-2 years		3 – 3-5 years		4 – 6-10 years		5 – 11-20 years		6 – >21 years				
Outcome	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**x^2**	**(df)**	**p**
Never participated in public consultation	8	40	24	50	41	41.8	38	31.4	43	26.9	99	26.7	18.773	5	0.002
Participated in public consultation	12	60	24	50	57	58.2	83	68.6	117	73.1	272	73.3			

Table 18.2: Chi-square results for tenure vs. past public consultation specifics

	1 - <1 year		2 – 1-2 years		3 – 3-5 years		4 – 6-10 years		5 – 11-20 years		6 – >21 years				
Outcome	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**x^2**	**(df)**	**p**
Have not attended an open house	20	100	45	93.8	83	84.7	89	73.6	114	71.3	231	62.3	43.423	5	≤0.0004
Attended an open house	0	0	3	6.3	15	15.3	32	26.4	46	28.8	140	37.7			

	1 - <1 year		2 – 1-2 years		3 – 3-5 years		4 – 6-10 years		5 – 11-20 years		6 – >21 years				
Outcome	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**x^2**	**(df)**	**p**
Have not attended a public meeting	18	90	44	91.7	72	73.5	85	70.2	107	66.9	207	55.8	39.191	5	≤0.0004
Have attended a public meeting	2	10	4	8.3	26	26.5	36	29.8	53	33.1	164	44.2			
	1 - <1 year		**2 – 1-2 years**		**3 – 3-5 years**		**4 – 6-10 years**		**5 – 11-20 years**		**6 – >21 years**				
Outcome	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**x^2**	**(df)**	**p**
Have not wrote a letter	18	90	43	89.6	81	82.7	84	69.4	108	67.5	231	62.3	30.255	5	≤0.0004
Wrote a letter	2	10	5	10.4	17	17.3	37	30.6	52	32.5	140	37.7			
	1 - <1 year		**2 – 1-2 years**		**3 – 3-5 years**		**4 – 6-10 years**		**5 – 11-20 years**		**6 – >21 years**				
Outcome	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**x^2**	**(df)**	**p**
Have not responded to a paper survey	18	90	45	93.8	91	92.9	103	85.1	134	83.8	273	73.6	30.652	5	≤0.0004
Have responded to a paper survey	2	10	3	6.3	7	7.1	18	14.9	26	16.3	98	26.4			

	1 - <1 year		2 – 1-2 years		3 – 3-5 years		4 – 6-10 years		5 – 11-20 years		6 – >21 years				
Outcome	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**x^2**	**(df)**	**p**
Have not responded to an online survey	15	75	33	68.8	52	53.1	62	51.2	74	46.3	171	46.1	15.339	5	0.009
Have responded to an online survey	5	25	15	31.3	46	46.9	59	48.8	86	53.8	200	53.9			
	1 - <1 year		**2 – 1-2 years**		**3 – 3-5 years**		**4 – 6-10 years**		**5 – 11-20 years**		**6 – >21 years**				
Outcome	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**x^2**	**(df)**	**p**
Have not sat on an advisory committee	20	100	48	100	92	93.9	107	88.4	148	92.5	318	85.7	17.463	5	0.004
Have sat on an advisory committee	0	0	0	0	6	6.1	14	11.6	12	7.5	53	14.3			

Table 18.3: Kruskal-Wallis results for tenure vs. desirability of public consultation types

	1 - <1 year		2 – 1-2 years		3 – 3-5 years		4 – 6-10 years		5 – 11-20 years		6 – >21 years				
Outcome	**Mean Rank**	**n**	**Mean Rank**	**n**	**Mean Rank**	**n**	**Mean Rank**	**n**	**Mean Rank**	**n**	**Mean Rank**	**n**	**H(x^2)**	**(df)**	**p**
Writing a letter	287.33	12	321.7	38	321.34	92	362.85	108	353.66	145	391.38	335	13.791	5	0.017
Attending meetings with decision-makers	387.88	12	296.4	38	355.64	92	383.78	109	337.65	148	388.06	337	12.955	5	0.024
Completing online surveys	420.96	13	392.5	39	403.27	92	395.88	110	390.18	149	336.49	334	16.523	5	0.005

Table 18.4: Mann-Whitney U results for tenure vs. desirability of public consultation types

Outcome	Tenure Group	z	p value	Bonferroni adjusted p value
Writing a letter	**3 - 6**	-2.921	0.003	0.015
Attending meetings with	**2 -6**	-2.602	0.009	0.045
Completing online surveys	**3 - 6**	-2.912	0.004	0.02
	4 -6	-2.68	0.007	0.035
	5 - 6	-2.6	0.009	0.045

Table 18.5: Chi-square results for tenure vs. desired types of notification

	1 - <1 year		2 – 1-2 years		3 – 3-5 years		4 – 6-10 years		5 – 11-20 years		6 – >21 years				
Source	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**x^2**	**(df)**	**p**
No desire for notification in local newspaper	7	35	27	56.3	42	42.9	41	33.9	55	34.4	120	32.3	13.138	5	0.022
Desire for notification in local newspaper	13	65	21	43.8	56	57.1	80	66.1	105	65.6	251	67.7			

Table 18.6: Chi-square results for tenure vs. desired types of feedback

	1 - <1 year		2 – 1-2 years		3 – 3-5 years		4 – 6-10 years		5 – 11-20 years		6 – >21 years				
Outcome	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**x^2**	**(df)**	**p**
No desire for feedback by email	18	90	28	58.3	50	51	65	53.7	90	56.3	195	52.6	11.718	5	0.039
Desire for feedback by email	2	10	20	41.7	48	49	56	46.3	70	43.8	176	47.4			

Table 19.1: Chi-square results for residence vs. past public consultation

	1 - Large City		2 - Other		x^2	(df)	p
Outcome	**n**	**(%)**	**n**	**(%)**			
Never participated in public consultation	130	41.1	135	30	10.18	1	0.001
Participated in public consultation	186	58.9	315	70			

Table 19.2: Chi-square results for residence vs. past public consultation specifics

	1 - Large City		2 - Other		x^2	(df)	p
Outcome	**n**	**(%)**	**n**	**(%)**			
Have not attended an open house	233	73.7	301	66.9	4.12	1	0.042
Attended an open house	83	26.3	149	33.1			
	1 - Large City		**2 - Other**		x^2	**(df)**	**p**
Outcome	**n**	**(%)**	**n**	**(%)**			
Have not attended a public meeting	228	72.2	262	58.2	15.628	1	≤0.0004
Have attended a public meeting	88	27.8	188	41.8			
	1 - Large City		**2 - Other**		x^2	**(df)**	**p**
Outcome	**n**	**(%)**	**n**	**(%)**			
Have not responded to an online survey	164	51.9	194	43.1	5.759	1	0.016
Have responded to an online survey	152	48.1	256	56.9			
	1 - Large City		**2 - Other**		x^2	**(df)**	**p**
Outcome	**n**	**(%)**	**n**	**(%)**			
Have not sat on an advisory committee	296	93.7	386	85.8	11.846	1	0.001
Have sat on an advisory committee	20	6.3	64	14.2			

Table 19.3: Mann-Whitney U results for residence vs. desirability of public consultation types

Outcome	1 – Large City Mean Rank	n	2 – Other Mean Rank	n	z	p
Attending public meetings	340.61	304	393.74	439	-3.574	≤0.0004
Attending meetings with decision-makers on the land	349.23	302	385.17	438	-2.368	0.018
Completing paper surveys	348.04	304	386.97	437	-2.537	0.011

Table 19.4: Chi-square results for residence vs. desired types of notification

	1 - Large City		2 -Other		x^2	(df)	p
Outcome	**n**	**(%)**	**n**	**(%)**			
No desire for notification in local newspaper	132	41.8	97	21.6	36.2021	1	≤0.0004
Desire for notification in local newspaper	184	58.2	353	78.4			

Table 19.5: Chi-square results for residence vs. desired types of feedback

	1 - Large City		2 - Other		x^2	(df)	p
Outcome	**n**	**(%)**	**n**	**(%)**			
No desire for feedback by mail	283	89.6	373	82.9	6.712	1	0.01
Desire for feedback by mail	33	10.4	77	17.1			

Table 20.1: Chi-square results for recreation quality change vs. past public consultation

	1 - increased/ improved		2 - same/ unchanged		3 - decreased/ declined		x^2	(df)	p
Outcome	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**			
Never participated in public consultation	40	34.8	111	44.4	106	24.8	28.118	2	≤0.0004
Participated in public consultation	75	65.2	139	55.6	322	75.2			

Table 20.2: Chi-square results for recreation quality change vs. past public consultation specifics

	1 - increased/ improved		2 - same/ unchanged		3 - decreased/ declined		x^2	(df)	p
Outcome	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**			
Have not attended an open house	92	80	203	81.2	260	60.7	37.848	2	≤0.0004
Attended an open house	23	20	47	18.8	168	39.3			
	1 - increased/ improved		**2 - same/ unchanged**		**3 - decreased/ declined**		**x^2**	**(df)**	**p**
Outcome	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**			
Have not attended a public meeting	87	75.7	185	74	235	54.9	32.961	2	≤0.0004
Have attended a public meeting	28	24.3	65	26	193	45.1			

	1 - increased/ improved		2 - same/ unchanged		3 - decreased/ declined		x^2	(df)	p
Outcome	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**			
Have not wrote a letter	85	73.9	204	81.6	250	58.4	41.162	2	≤0.0004
Wrote a letter	30	26.1	46	18.4	178	41.6			
	1 - increased/ improved		**2 - same/ unchanged**		**3 - decreased/ declined**		x^2	(df)	p
Outcome	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**			
Have not responded to a paper survey	99	86.1	222	88.8	317	74.1	24.502	2	≤0.0004
Have responded to a paper survey	16	13.9	28	11.2	111	25.9			
	1 - increased/ improved		**2 - same/ unchanged**		**3 - decreased/ declined**		x^2	(df)	p
Outcome	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**			
Have not responded to an online survey	56	48.7	151	60.4	172	40.2	25.886	2	≤0.0004
Have responded to an online survey	59	51.3	99	39.6	256	59.8			
	1 - increased/ improved		**2 - same/ unchanged**		**3 - decreased/ declined**		x^2	(df)	p
Outcome	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**			
Have not sat on an advisory committee	108	93.9	237	94.8	365	85.3	18.015	2	≤0.0004
Have sat on an advisory committee	7	6.1	13	5.2	63	14.7			

Table 20.3: Kruskal-Wallis results for recreation quality change vs. desirability of public consultation types

	1 - Increased/Improved		2 - Same/Unchanged		3 - Decreased/Declined				
Outcome	**Mean Rank**	**n**	**Mean Rank**	**n**	**Mean Rank**	**n**	**H(x^2)**	**(df)**	**p**
Attending meetings with decision-makers	331.81	105	360.3	235	388.41	402	7.698	2	0.021
Attending meetings with decision-makers on the land	340.37	107	330.52	229	390.94	392	15.129	2	0.001
Completing online surveys	399.12	106	404.46	325	345.88	402	14.704	2	0.001

Table 20.4: Mann-Whitney U results for recreation quality change vs. desirability of public consultation types

Outcome	Tenure Group	z	p value	Bonferroni adjusted p value
Attending meetings with decision-makers	**1 -3**	-2.563	0.01	0.02
Attending meetings with decision-makers on the land	**1 - 3**	-2.461	0.014	0.028
	2 - 3	-3.575	≤0.0004	≤0.0016
Completing online surveys	**1 - 3**	-2.436	0.015	0.03
	2 - 3	-3.51	≤0.0004	≤0.0016

Table 21.1: Chi-square results – effects/influence vs. past public consultation

	1 - did not influence		**2 - detracted somewhat**		**3 - detracted greatly**		**x^2**	**(df)**	**p**
Outcome	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**			
Never participated in public consultation	28	38.4	110	35.9	56	23.3	11.839	2	0.003
Participated in public consultation	45	61.6	196	64.1	184	76.7			

Table 21.2: Chi-square results for effects/influence vs. past public consultation specifics

	1 - did not influence		2 - detracted somewhat		3 - detracted greatly		x^2	(df)	p
Outcome	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**			
Have not attended an open house	52	71.2	220	71.9	146	60.8	8.024	2	0.018
Attended an open house	21	28.8	86	28.1	94	39.2			
	1 - did not influence		**2 - detracted somewhat**		**3 - detracted greatly**		**x^2**	**(df)**	**p**
Outcome	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**			
Have not attended a public meeting	49	67.1	208	68	126	52.5	14.619	2	0.001
Have attended a public meeting	24	32.9	98	32	114	47.5			
	1 - did not influence		**2 - detracted somewhat**		**3 - detracted greatly**		**x^2**	**(df)**	**p**
Outcome	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**			
Have not wrote a letter	46	63	221	72.2	138	57.5	13.102	2	0.001
Wrote a letter	27	37	85	27.8	102	42.5			
	1 - did not influence		**2 - detracted somewhat**		**3 - detracted greatly**		**x^2**	**(df)**	**p**
Outcome	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**			
Have not responded to an online survey	34	46.6	152	49.7	93	38.8	6.558	2	0.038
Have responded to an online survey	39	53.4	154	50.3	147	61.3			

	1 - did not influence		2 - detracted somewhat		3 - detracted greatly		x^2	(df)	p
Outcome	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**			
Have not responded to a phone survey	68	93.2	288	94.1	211	87.9	6.98	2	0.03
Have responded to a phone survey	5	6.8	18	5.9	29	12.1			
	1 - did not influence		**2 - detracted somewhat**		**3 - detracted greatly**		**x^2**	**(df)**	**p**
Outcome	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**			
Have not sat on an advisory committee	66	90.4	279	91.2	198	82.5	9.957	2	0.007
Have sat on an advisory committee	7	9.6	27	8.8	42	17.5			

Table 21.3: Kruskal-Wallis results for effects/influence vs. desirability of public consultation types

	1- Did not influence		2 - Detracted somewhat		3 -Detracted greatly				
Outcome	**Mean Rank**	**n**	**Mean Rank**	**n**	**Mean Rank**	**n**	**H(x^2)**	**(df)**	**p**
Attending meetings with decision-makers on the land	265.22	69	276.74	290	322.35	226	12.762	2	0.002

Table 21.4: Mann-Whitney U results for effects/influence vs. desirability of public consultation types

Outcome	Tenure Group	z	p value	Bonferroni adjusted p value
Attending meetings with decision-makers on the land	**1 - 3**	-2.57	0.01	0.02
	2 - 3	-3.25	0.001	0.002