PRELIMINARY LIST OF 'HIGH VALUE' WETLANDS FOR MOOSE WITHIN THE CARIBOO FOREST REGION

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DRAFT
December 2003

(to be finalized March 2004)

EXECUTIVE SUMMARY

This report presents a preliminary analysis of moose/wetland interactions within the Cariboo Forest Region. Moose/wetland interactions were analyzed by comparing known moose-locations with adjacent wetlands using maps created by GIS. Moose-locations were derived from winter moose surveys conducted from 1994 to 2002 and wetland polygons were determined using two wetland themes provided by the Ministry of Sustainable Resource Management.

The primary goal of this project was to produce a preliminary list of 'High Value' wetlands for moose within the Cariboo Forest Region that represented 10-15% of the total wetlands in this region. For this exercise, 'High Value' wetlands were considered wetlands that were disproportionately used by moose during the winter season (the most critical season for the survival of moose).

'High Value' wetlands were determined by measuring the number of known moose-locations surrounding each wetland as they appear on maps that contained moose-locations and wetland polygons. Wetlands that were surrounded by a disproportionately large number of moose were considered 'High Value'. The number of moose observed around each wetland was measured and those wetlands which contained 4 or more moose within a 500m buffer zone extending from the wetland perimeter were considered 'High Value'. 'High Value' wetland information was organized into Excel™, GIS, and GOAT files.

The secondary goal of this project was to discuss best management practices for 'High Value' wetlands. Ecosystem Biologists from the Chilcotin, Horsefly, Quesnel, Williams Lake, and 100 Mile House Forest Districts to were consulted to discuss what the best management practices were for the management of 'High Value' wetlands for moose. Conversations with these people provided information regarding moose distribution and wetland usage during the winter obtained from field observations. In particular, areas of 'High Value' winter range were discussed and these areas were mapped.

KEYWORDS

British Columbia, Cariboo Forest Region, Cariboo Wildlife Region, moose, and wetlands.

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1.0 INTRODUCTION

Moose, *Alces alces*, the largest member of the deer family, are distributed throughout the Cariboo Forest Region where they are an important food and economic resource. Moose provide opportunities for recreational and sustenance hunting. Guided hunting and viewing opportunities are economically important to the Cariboo Region. The Cariboo Region supports 12% of the estimated provincial moose population (Langin and Youds 1992 as reported in Sopuck et al., 1997).

Preserving winter habitat for moose is important for maintaining a healthy moose population. Although moose are well adapted to cold climates, the winter season is the most critical for the population health. During this season, no habitat is more important to these ungulates for survival than wetlands and adjacent coniferous stands.

Wetlands provide a concentrated source of sustenance during the winter when energy requirements are the most demanding. By foraging within wetlands, moose are able to obtain the maximum amount of energy while limiting their exposure to the elements or predators and reduce the effort required to search for food.

Coniferous stands provide shelter, security, and travel corridors for moose, all factors which reduce energy demands and improve survivability of moose. Coniferous stands make for excellent shelter for moose because they provide protection from moderate temperature extremes by allowing moose to escape the wind or sun. Security is improved by providing screening from predators and travel corridors are created by interception of snow (Lemke, 2001).

For the Cariboo Forest Region, wetlands are categorized as "lands that are wet enough or inundated frequently enough to develop and support a distinctive natural vegetation cover that is in strong contrast to the adjacent matrix of better drained lands" (Runka and Lewis 1981 as reported in AIM, 1994). The *Forest Practices Code* defines wetland as "a swamp, marsh or other similar area that supports natural vegetation that is distinct from the adjacent upland areas" and reports that "riparian areas include the stream, wetland, or lake and the adjacent moist area where vegetation is distinct from that of the surrounding upland" (Forest Practices Code, 1995).

Knowledge regarding the specific usage of wetlands by moose was identified as a data gap for the management of forests in the Cariboo Forest Region (Sopuck et al., 1997). This report presents a preliminary attempt to determine a list of 'High Value' wetlands for moose within the Cariboo Forest Region. The overall goals were to update existing moose information (from aerial surveys), establish a preliminary list of 'High Value' wetlands, and to discuss best management practices for coniferous stands surrounding these wetlands.

2.0 OBJECTIVES

The objectives of the study were:

- To identify wetlands that considered 'High Value' for moose.
- To meet with Ecosystem Biologists and discuss best management practices currently used for the management of moose within the various forest districts within the Cariboo Forest Region.
- To recommend best management practices for moose.
- To make recommendations for future moose/habitat analysis.
- To update existing moose information (from aerial surveys).

3.0 ACKNOWLEDGEMENTS

John Youds and Randy Wright (WLAP, Williams Lake) were responsible for overseeing this project.

Jen Ballentine (WLAP, Williams Lake) was responsible for GIS work during this project including writing programs and creating figures.

Katharine VanSpall was responsible for creating maps of 'High Value' wetlands.

Marcel Demers, Roger Packham, Darcy Peel, Geoff Price, and Chris Schmid provided information of moose usage within various forest districts as well as discussed best management practices for moose (WLAP and MSRM, Williams Lake).

Doug Jury (WLAP, Kamloops) was contacted during this project for exchange of ideas.

4.0 METHODS AND MATERIALS

4.1 GENERAL METHODOLOGY

Moose/wetland interactions within the Cariboo Forest Region were analyzed by comparing known moose-locations with adjacent wetlands.

Moose-locations were determined from winter moose surveys conducted within the Cariboo Forest Region from 1994 to 2002. Information from each survey was organized into databases (Stratification Database and Moose-Location Database).

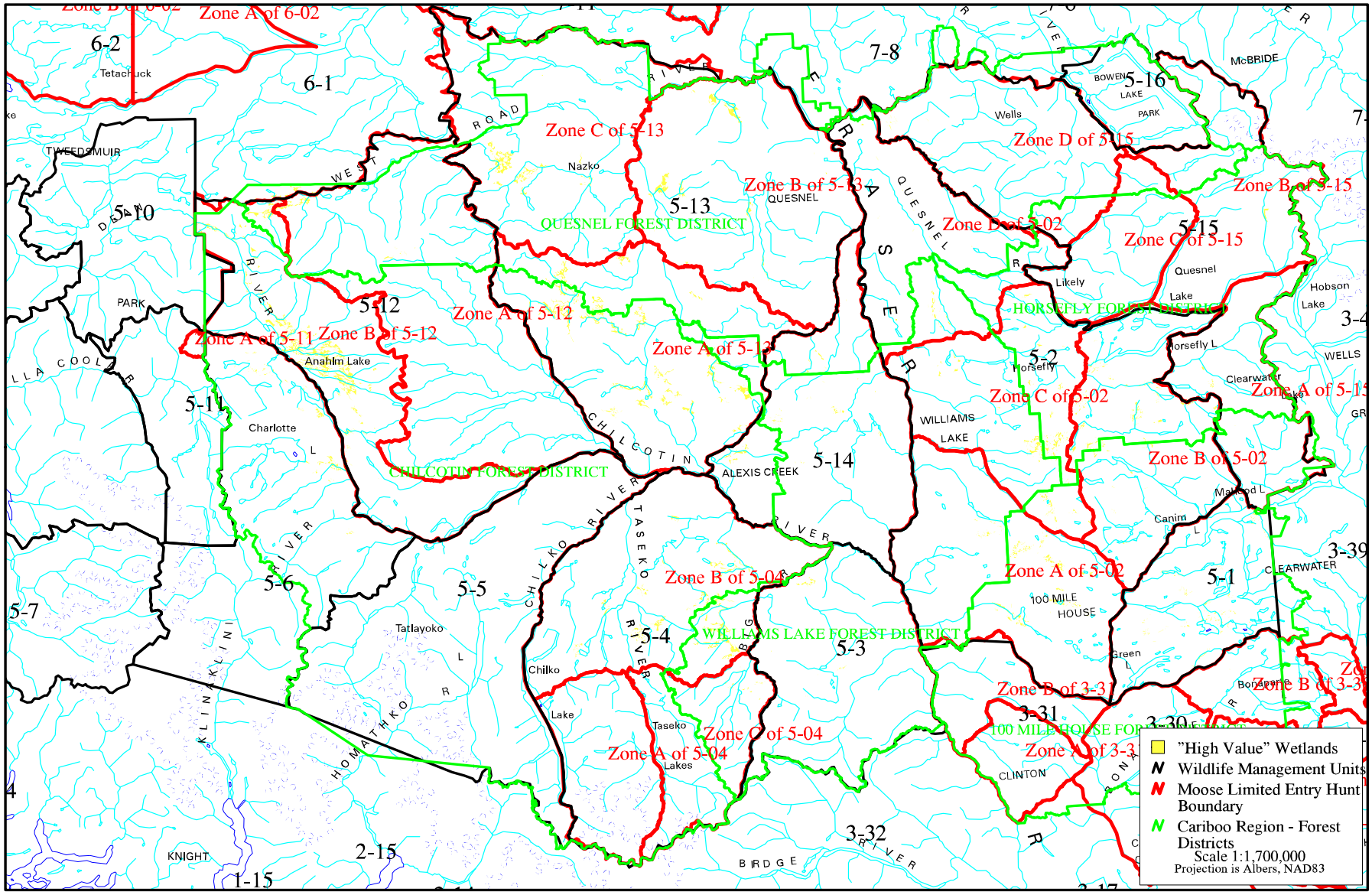
Wetlands that showed a disproportionate usage by moose were indicated on a 'High Value' wetland use.

4.2 STUDY AREA

The study area was located within the Cariboo Forest Region and included all 1:50,000 mapsheets that fall, wholly or partially, within the Cariboo Forest Region except for a portion of the Cariboo Forest Region, within the 100 Mile Forest District, that was outside of the Cariboo Wildlife Region (Figure 1). All mapsheets used for this project are indicated in Appendix 1.

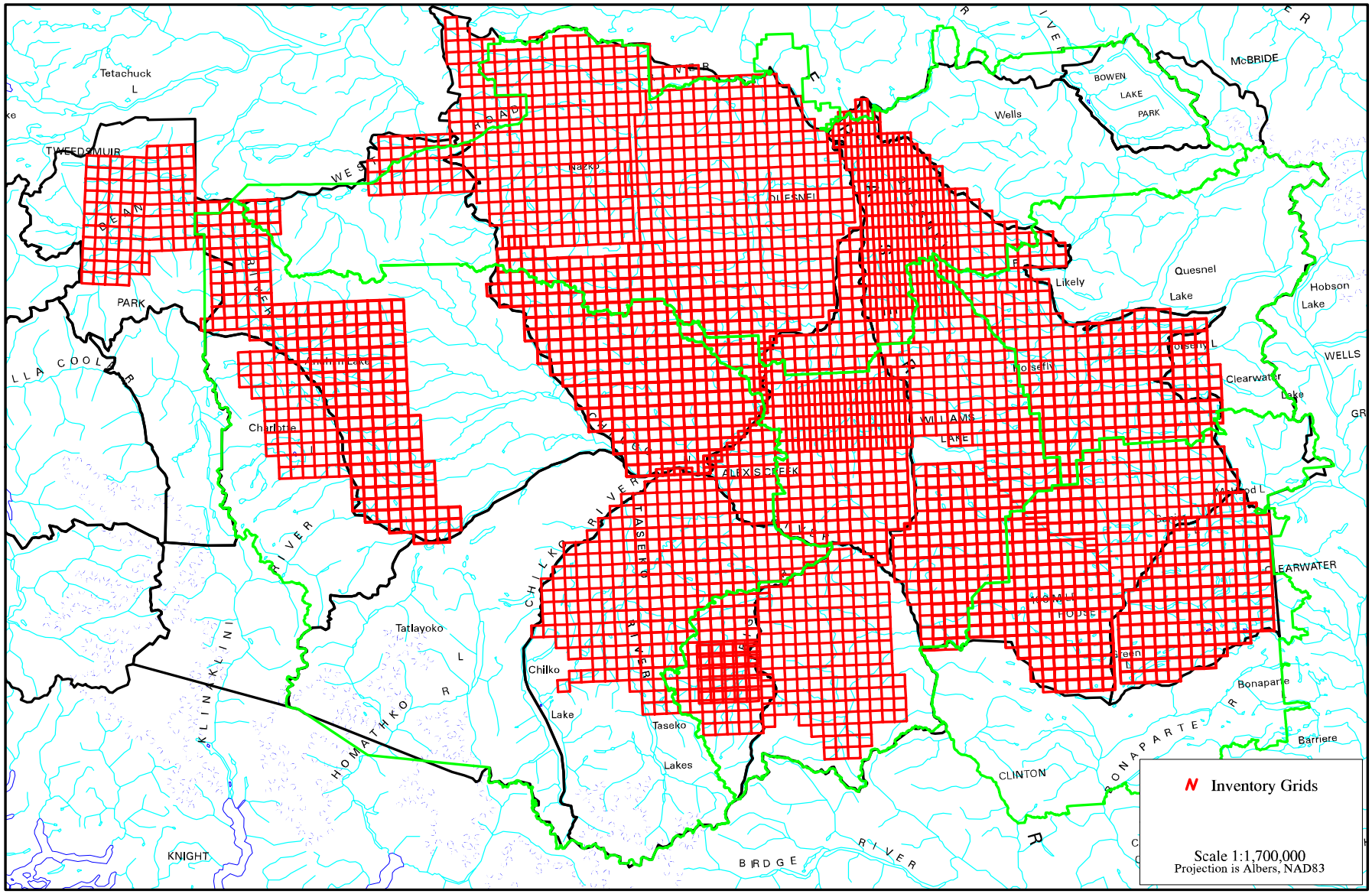
It is important to note that not all portions of this study area have been represented with winter moose inventories (Figure 2).

Figure 1. Study Area for Creation of Preliminary List of "High Value" Wetlands



Project #p9705015/wetlands_y2002/plots/fig_wetland_studyarea.ps - October 03, 2003

Figure 2. Moose Inventory Coverage in Relation to Study Area (1994 - 2003)



Project #p9705015/wetlands_y2002/plots/fig_mooseblk.ps - October 03, 2003

4.3 MOOSE-LOCATION DATA

Moose-locations for this report were determined from winter moose survey flights conducted from 1994 to 2002. Stratified Random Block (SRB) and reconnaissance survey techniques were both used to gather moose-location information. For most surveys, Universal Transverse Mercator (UTM) coordinates for each moose-location were determined with Global Positioning System (GPS) units during the survey flights and for other surveys, UTM coordinates were determined post-survey from the datasheets.

In 1998 a database was created from moose-locations recorded during winter moose inventories from 1994 to 1998 occurring within a small portion of the Cariboo Forest Region. For this report, the existing database was updated to include all moose-locations recorded within the Cariboo Forest Region from 1994 to 2002. A total of 4,649 moose-locations were included in the database (Table 1).

Table 1: Summary of moose-locations and moose within the study area.

Summary of Moose-locations and Moose Within the Study Area	
Locations	4649
Total Moose	9254
Bulls	1714
Cows	5079
Calves	2029
Unclassified	177

The number of moose-locations (and moose) from 1994 – 2002 within the entire study area. Includes moose-locations recorded on mapsheets or datasheets as well as locations determined using Global Positioning System (GPS) units for stratified random block and reconnaissance surveys.

4.4 WETLAND THEMES

Two wetland themes, both provided by the Ministry of Sustainable Resource Management, were used for this project to map against the moose-locations.

The primary wetland theme (arclibrary/ECO/wetlands/twet_021016) was created by extracting Marsh polygons and some Non-Productive Brush polygons from Forest Cover Maps. All polygons generated by this theme met the definition of wetland as defined by the *Riparian Management Guidebook* (Forest Practices Code, 1995). This theme included all wetlands within the Cariboo Forest Region greater than 0.05 ha. and many wetlands as small as 0.01 hectares. In total 22,682 wetland polygons were included in this theme.

The Riparian Management Guidebook says "A wetland is a swamp, marsh, or other similar area that supports natural vegetation that is distinct from the adjacent upland areas. More specifically, a wetland is an area where a water table is at, near, or above the surface or where soils are water-saturated for a sufficient length of time that excess water and resulting low oxygen levels are principal determinants of vegetation and soil development… …Wetlands include shallow open water, swamps, marshes, fens, and bogs. In addition, shrub-carrs are included here as wetlands…" (Forest Practices Code, 1995).

The secondary wetland theme included all wetlands polygons provided by TRIM mapping. This theme was used as a backup for the primary wetland theme.

4.5 MAPPING MOOSE-LOCATIONS OVER WETLAND THEMES

Moose/wetland maps (Project #p97050-15/wetlands_y2002) were created by mapping moose-locations and wetland polygons on 1:50,000 scale maps. Moose-locations were given a different color and symbol for each survey year and for each moose-location the corresponding number of moose observed at that location was indicated.

Wetland polygons, provided by Forest Cover Maps and TRIM themes respectively, were used for these moose/wetland maps. The primary wetland theme was derived from Forest Cover Maps and wetlands were indicated by solid green polygons, whereas the secondary wetland theme was provided by TRIM and wetlands were outlined using green dots.

The following features were also indicated on the moose/wetland maps: roads, water, forest district boundaries, moose Limited Entry Hunting (LEH) boundaries, and moose survey grids.

4.6 MOOSE DISTRIBUTION INFORMATION PROVIDED BY ECOSYSTEM BIOLOGISTS

Conversations with Ecosystem Biologists provided information regarding moose distribution obtained from field observations. In particular, areas of 'High Value' winter range were discussed and these areas were mapped. This information was manually transferred to the moose/wetlands maps. Wetlands that were within indicated 'High Value' moose winter range were included in the 'High Value' wetland database.

4.7 DETERMINING 'HIGH VALUE' WETLANDS

Moose-locations and wetland polygons were mapped on 1:50,000 scale maps. 'High Value' wetlands were determined by manually comparing moose-locations to wetland polygons as they appeared on the moose/wetland maps. For appropriate wetland polygons (polygons which were near to moose-locations), a 1cm buffer (representing 500m) was manually drawn around wetland perimeters.

Wetlands that contained 4 or more moose within the 500m buffer surrounding the wetland perimeter during a single year were considered 'High Value.' The requirement for 4 or more moose was arbitrarily chosen because it was likely to represent more than one family unit of moose.

4.8 DISCUSSING BEST MANAGEMENT PRACTICES

One of the objectives of this project was to meet with Ecosystem Biologist and discuss best management practices currently used for the management of moose within the various forest districts of the Cariboo Forest Region. For this section current recommended best management practices are discussed.

Common strategies for the protection of 'High Value' wetlands for moose within all forest districts of the Cariboo Forest Region include: creating buffer zones around 'High Value' wetlands, maintaining connectivity among 'High Value' wetlands within wetland complexes, and managing access to 'High Value' wetlands.

For the purpose of forestry management approaches to the maintenance of 'High Value' wetlands there were two types of 'High Value' wetlands to consider: isolated 'High Value' wetlands and 'High Value' wetlands within large wetland complexes. Although the forestry management strategies for maintaining these two types of 'High Value' wetlands may differ, the access management concerns were the same.

For isolated 'High Value' wetlands a coniferous stand buffer zone of up to the maximum allowable width under the Cariboo-Chilcotin Land Use Plan (CCLUP) of 200m was recommended for entire wetlands. It was further recommended to integrate wildlife tree patch rules in lieu of or in conjunction with consistent buffer zones to increase the area of coniferous stands surrounding 'High Value' wetlands.

The CCLUP states that for the management of moose "Their habitat needs will be largely met through application of the FPC; of particular importance are the conservation of wetland and riparian areas. This management includes forested buffers around wetland and riparian areas… …Additional buffering of wetlands (up to 200 meters) may be required adjacent to key wetlands or riparian habitats, particularly on the Chilcotin Plateau."

While although the maximum allowable buffer zone was recommended within most forest districts, half the maximum buffer zone was chosen for the Chilcotin Forest District. For the Chilcotin forest district, most of the 'High Value' wetlands had moderate but consistent use by moose during the winter rather than a few wetlands that show a high level of usage, therefore it was important to buffer as many 'High Value' wetlands as possible.

For large wetland complexes, managing the rate of coniferous stand harvest in the areas surrounding the 'High Value' wetlands was recommended by using any of following strategies: implementing extended harvest rotations, using seral stage management, and limiting the area of harvest to one third of the wetland complex.

It was recommended that forest management practices be implemented to preserve, at any given time, enough coniferous stands within and surrounding wetland complexes to allow connectivity among individual wetlands within these complexes. When it was not possible to provide buffer zones around all the wetlands within a 'High Value' wetland complex, it was deemed to be more critical to maintain connectivity among the individual wetlands because it would provide travel corridors for the moose. In these situations, it was suggested that it would be prudent to maintain coniferous stands, if even for only a rotational basis, over a portion of any given wetland within 'High Value' wetland complexes so that moose may continue to use individual wetlands within these complexes.

Along with forestry management, access management is important for the protection of moose populations. Whereas the former is important for protection of moose habitat the latter is important for the protection for individual moose within the population. Access management can greatly improve the survival of moose by increasing the effort required by hunters to reach moose. It was recommended that forestry roads should avoid proximity to 'High Value' wetlands whenever possible and should never transect 'High Value' wetland complexes. It was recommended that closures of forestry roads should ensue for at least one km around 'High Value' wetlands upon completion of forest harvesting activities.

5.0 RESULTS AND DISCUSSION

The number of wetlands that met the criteria of 'High Value' based upon documented moose usage was 2,347 out of 22,682 wetlands or 10.3% (Table 2). The Chilcotin Forest District (720) had the most 'High Value' wetlands and the Quesnel Forest District (283) had the least.

Table 2: Summary of 'High-Value' wetlands for moose within the Cariboo Forest Region.

Summary of 'High-Value' Wetlands for Moose within the Cariboo Forest Region					
	Wetland Polygons		Elevation (m)		
	'High Value'	Total	Low	High	Average
Chilcotin	720	not available	834.0	1,553.2	1,180.1
Horsefly	432	not available	675.8	1,540.8	1,004.2
100 Mile House	477	not available	768.2	1,808.6	1,051.6
Williams Lake	434	not available	649.5	1,670.2	1,235.2
Quesnel	283	not available	518.9	1,661.6	1,026.7
Cariboo Region	2,347	22,682	518.9	1,808.6	1,113.2

	Area (ha)			Perimeter (m)		
	Low	High	Average	Low	High	Average
Chilcotin	0.02	1,510.0	37.6	44.7	288,064.8	6,564.7
Horsefly	0.10	194.5	12.2	87.5	26,839.0	2,249.6
100 Mile House	0.60	238.4	10.9	372.3	54,376.2	2,556.4
Williams Lake	0.04	795.8	14.4	73.6	144,692.0	2,652.5
Quesnel	0.50	2,625.7	39.6	277.2	494,152.3	6,188.4
Cariboo Region	0.02	2,625.7	23.4	44.7	494,152.3	4,185.2

'High-Value' wetlands for moose within the Cariboo Forest District were determined by mapping moose-locations from winter moose inventories against wetland positions. Wetlands that had 4 or more moose located within a 400m buffer of the wetland edge were considered 'High Value.'

There were 239 wetlands from the TRIM coverage that met the criteria for 'High Value' that were absent from the Forest Cover Map coverage. These wetlands were added to the 'High Value' wetland database.

5.1 GENERAL DISCUSION

Moose location data was useful for establishing a 'High Value' wetland list because this data demonstrated actual use of wetlands by moose. Unfortunately, moose-location data only represent a snapshot of moose activity and will undoubtedly miss some wetland use by moose that takes place throughout the winter. For example, for each moose survey only 30% of the survey blocks were chosen for intensive survey using helicopters and the other 70% were not surveyed and represent missing data.

During SRB moose inventories, higher rated Sample Units (SUs) were disproportionately sampled (up to 100% sampling for the highest category) in order to reduce variability. This means the probability of surveying SUs that contained 'High Value' wetlands was increased whereas the probability of surveying SUs that did not was decreased.

It is important to continue to collect moose-location data using GPS units during winter moose inventories and to repeat the process that established this list of 'High Value' wetlands once the body of moose-location data has increased.

In conjunction with analyzing moose-location data as done in this report, it would be useful to use stratification data from moose inventories as a means of determining areas that should be studied further for improving the list of 'High Value' wetlands. For example, survey SUs that were rated moderate or high and were not sampled using helicopters may be candidate areas for further scrutiny. These areas may contain 'High Value' wetlands based on moose usage but were missed because no moose observations were made for these areas.

There are some large areas within the Chilcotin Forest District that contain no recorded moose-locations because these areas, portions of MU 5-12 and MU 5-13, have not been subject to survey.

5.2 WINTER MOOSE SURVEYS

Moose-location data from winter moose inventories should be collected using GPS units and this data should be entered into the existing Moose-Location Database. Although the main objective of a moose survey is to establish a population estimate, moose distribution and wetland usage information is easily obtainable from moose-location data.

5.3 CREATION OF 'HIGH VALUE' WETLANDS DATABASE

One of the objectives of this project was to develop a list of wetlands within the study area that were identified as being of 'High Value' for moose. These 'High Value' wetlands were organized into a database using an Excel™ spreadsheet. An example of this database is provided in Appendix 2. The file name given to the 'High Value' wetlands for moose database created in Excel™ is **'high value' wetlands** and file name given to the corresponding metadata created in Word™ is **'High Value' wetlands database – metadata – 2003** (Table 3). From the database, two themes were created that could be used to map the wetlands; one theme was accessible using GIS and the other using GOAT.

Table 3: Summary of files created for 'High Value' wetlands database.

Summary of Files Created for 'High-Value' Wetlands Database		
File Type	**File Root**	**Filename**
Excel™	arcproj/P9705015/wetlands_y2002/database/tweta_rca.xls	tweta_rca.xls
GIS	arclibrary/eco/wetland/tcwet_rca	tcwet_rca
GOAT	wildlife/habitat/ES/'high value' wetlands for moose for the Cariboo region	'high value' wetlands
Word	arcproj/P9705015/wetlands_y2002/database/tweta_rca.xls	'High Value' wetlands database – metadata - 2003

Summary of files created for 'High-Value' wetlands database. The database includes 'High-Value' wetlands for moose within the Cariboo Forest District.

5.4 VERIFICATION OF 'HIGH VALUE' WETLANDS LIST

Most of the 'High Value' wetlands were classified based on recorded moose usage during the winter (moose-location data) and therefore have already been verified. However, some 'High Value' wetlands were determined using information arising from conversations with Ecosystem Biologists and have not been verified. The latter 'High Value' wetlands should be verified using aerial or ground survey.

Datasheets for aerial survey 'High Value' wetlands have already been produced for all the 'High Value' wetlands that need to be verified (Table 4).

Table 4: Number of survey map/datasheets for 'High Value' wetlands that need to be verified.

Number of Survey Map/Datasheets for 'High Value' Wetlands that Need to be Verified	
Forest District	**Number of Survey Map/Datasheets Created**
Chilcotin	108
Horsefly	45
Quesnel	49
Williams Lake	49
100 Mile House	58

Summary of map/datasheets created within each forest district of the Cariboo Region for 'High Value' wetlands that need to be verified for usage by moose.

There are some factors to consider in regards to verification of 'High Value' wetlands. Firstly, any aerial visit to a wetland only provides a brief temporal view into the use of the wetland by moose throughout the winter season. It would be unlikely that the peak use by moose of any one wetland would occur at the precise time of a field visit.

Secondly, although it is possible to confirm a wetland is 'High Value' by documenting moose usage, the reciprocal is not true. Absence of documented moose usage does not

necessarily mean that the wetland is not 'High Value.' There are many wetlands throughout the Cariboo Region that have never been visited during the winter.

6.0 RECOMMENDATIONS

6.1 IMMEDIATE RECOMMENDATIONS FOR THE DETERMINATION OF 'HIGH VALUE' WETLANDS

Some of the criteria for the determination of 'High Value' wetlands can be used in the immediate or near immediate future, whereas other criteria require further development. The following recommendations could be implemented immediately for the determination of 'High Value' wetlands:

1. The process for determining 'High Value' wetlands for moose as described in this report should be applied to portion of the 100-Mile House Forest District that was not completed at this time. Moose-location data for this area (Wildlife Region 3) is available from the Kamloops WLAP office.

2. Available information should be used to add to or modify the list of 'High Value' wetlands. For example moose-location information from the 2003 – Alexis Creek (5-13A) Winter Moose Inventory or historical information collected prior to 1994 should be used to add to the 'High Value' wetland database.

3. 'High Value' wetlands that were determined using information provided by Ecosystem Biologists that have not been sampled using helicopters during moose inventory surveys should be selected for verification using aerial survey.

4. Stratification information can also be used to supplement the 'High Value' wetland list. For example, wetlands within High stratified SUs that were not surveyed using a helicopter could be candidates for 'High Value' status. A brief analysis and modification of stratification information to account for year to year differences would be required prior to use of this information plus status of the wetlands would have to be determined using a ground or aerial site visit.

   Stratification information has some limitations for providing habitat information because stratification of SUs was intended to aid in the determination of moose population size rather than to describe habitat attributes. However, High or Moderate value SUs tend to have more moose than lower rated SUs because the habitat is above average and often contains 'High Value' wetlands.

6.2 FUTURE CONSIDERATIONS FOR THE DETERMINATION OF 'HIGH VALUE' WETLANDS

Some of the criteria for the determination of 'High Value' may be available in the future. Although not available at the present time, wetland characteristics may be used in the future to enhance the list of 'High Value' wetlands. Wetland habitat would have to be properly classified, including accurate delineation of all wetlands, in order to use the following characteristics of wetlands to determine a list of 'High Value' wetlands: (1) physical characteristics, (2) habitat characteristics, and (3) location of wetlands (Table 5).

Table 5: Possible criteria for the determination of 'High Value' wetlands.

Possible Criteria for the Determination of 'High Value' Wetlands	
Physical Characteristics of Wetlands	
Criteria	**Details**
Size	(area)
Perimeter	
Elevation	
Shape	(round, oval, or linear)
Complexity	(simple or complex)
Habitat Characteristics of Wetlands	
Classification	
Biogeoclimatic Zone	
Ecosection	
Site Position of wetland	(meso/macro)
Aspect	(relative to site position)
Slope	(relative to site position)
Moose Related Values of Wetlands	
Suitability	
Location of Wetlands	
Proximity to Human Activity	
Proximity to Road Access	

Summary of criteria that may considered in the future for the determination of 'High Value' wetlands.

Before the characteristics of wetlands could be used to predict their value for moose the current list of 'High Value' wetlands, determined using documented moose usage, must be verified. Statistical evaluation could be applied to the verified 'High Value' wetland list to establish a pattern of wetland characteristics that are common to 'High Value' wetlands. Measurements of wetland use would have to be compared quantitatively with the expected use according to that habitat type's availability relative availability. In all this would be an arduous task.

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7.2 PERSONAL COMMUNICATIONS

Demers, Marcel (WLAP, Williams Lake)
Jury, Doug (WLAP, Kamloops)
Packham, Roger (WLAP, 100 Mile House)
Peel, Darcy (MSRM, Williams Lake)
Price, Geoff (WLAP, Horsefly)
Schmid, Chris (WLAP, Alexis Creek)
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8.0 APPENDICES

Appendix 1: 1:50,000 mapsheets for moose/wetland analysis.

1:50,000 Mapsheets for Moose/Wetland Analysis								
092N/01	092O/02	092P/05	093A/01	093B/01	093C/01	093F/01	092G/01	092H/02
092N/06	092O/03	092P/06	093A/02	093B/02	093C/02	093F/02	092G/02	092H/03
092N/07	092O/04	092P/07	093A/03	093B/03	093C/03	093F/08	092G/03	092H/04
092N/08	092O/05	092P/10	093A/04	093B/04	093C/04		092G/04	
092N/09	092O/06	092P/11	093A/05	093B/05	093C/05		092G/05	
092N/10	092O/07	092P/12	093A/06	093B/06	093C/06		092G/07	
092N/11	092O/08	092P/13	093A/07	093B/07	093C/07			
092N/13	092O/09	092P/14	093A/08	093B/08	093C/08			
092N/14	092O/10	092P/15	093A/09	093B/09	093C/09			
092N/15	092O/11	092P/16	093A/10	093B/10	093C/10			
092N/16	092O/12		093A/11	093B/11	093C/11			
	092O/13		093A/12	093B/12	093C/12			
	092O/14		093A/13	093B/13	093C/13			
	092O/15		093A/14	093B/14	093C/14			
	092O/16		093A/15	093B/15	093C/15			
			093A/16	093B/16	093C/16			

Mapsheets used for the creation of 'High Value' wetlands for moose.

Appendix 2: Example of 'High Value' wetlands for moose database.

Example of 'High Value' Wetlands for Moose Database				
A	B	C	D	E
Twet_tag	district	a20k_tag	b50k_tag	cap_rate_winter
w-08329	CHILCOTIN FOREST DISTRICT	093C.073	093C/12	4
w-28991	WILLIAMS LAKE FOREST DISTRICT	092O.045	092O/06	2
w-28793	HORSEFLY FOREST DISTRICT	093A.053	093A/11	3

F	G	H	I	J
cap_rate_summer	suit_rate_winter	suit_rate_summer	utm_x	utm_y
2	4	2	329434	5841978
2	3	3	486169	5696014
3	4	3	602956	5824439

K	L	M	N	O
wetland_area (ha)	elevation (m)	wet_perimeter (m)	ecosection	beclabel
0.0	1036.1	44.7	Western Chilcotin Upland	SBPSmc
0.0	1530.0	73.6	Chilcotin Plateau	SBPSxc
0.1	990.3	87.5	Quesnel Highland	ICH wk 2

P	Q	R	S	T
Moose LEH MU	Landscape Unit	CCLUP_ZONE	MU	cap_points_winter
Zone B of 5-12	Beeftrail	ITCHA ILGACHUZ	MU_5-12B	2
Zone C of 5-04	Nadila	BIG CREEK/SOUTH CHILCOTIN	MU_5-04C	4
Zone C of 5-15	Likely	BEAVER VALLEY	MU_5-15C	3

U	V	W	X	Y
Cap_points_summer	suit_points_winter	suit_points_summer	Winter_obs	Spring_obs
4	2	4	0	0
4	3	3	0	0
3	2	3	0	0

Z	AA	AB	AC
Summer_obs	Fall_obs	Winter_inventory	Moose_Value
0	0	5	
0	0	5	
0	0	5	

A database was created to catalogue 'High Value' wetlands for moose: **'High Value' Wetlands for Moose Database**. The table above is an example of the headings and first three rows from this database.