Range Plant Communities and Range Health Assessment Guidelines

for the

Central Parkland Subregion of Alberta




Central Parkland

Range Plant Community Guide

Alberta Government

Second Approximation

Second approximation

Pub. No. T/125

2013

Prepared by

Tennille Kupsch, Kevin France, Harry Loonen, Angela Burkinshaw, Michael G. Willoughby

and

Ron L. McNeil Landwise Inc.

Red Deer

2013

Alberta Government

Pub. No.: T/ 265
ISBN No. 978-1-4601-0250-3 (Printed Edition)
ISBN No. 978-1-4601-0251-0 (On-line edition)

For copies of this report contact:

Tennille Kupsch
4920-51st St. Provincial Building
Red Deer, AB
(403) 340-5311
Email: tennille.kupsch@gov.ab.ca

Kevin France
Agriculture Centre, #100, 5401- 1st Ave. South
Lethbridge, AB
(403) 381-5982
Email: kevin.france@gov.ab.ca

This guide is also available on-line at srd.alberta.ca

TABLE OF CONTENTS

List of Tables

List of Figures

Executive Summary

The Central Parkland Natural Subregion is one of the most diverse subregions within the province of Alberta. The ecological diversity of this subregion creates a landscape that consists of a mosaic of different vegetative communities including a mixture of grasslands, mixed deciduous and mature aspen forests, saline wetlands, shrublands, and sparse communities stabilizing sand dune slopes. This diversity means that these lands are valued for a multitude of uses, including summer range for livestock, prime habitat for many species of wildlife, industrial use (oil and gas), and recreation. Despite the importance of many of the vegetation types in the Central Parkland for livestock grazing, there is little information available on how grazing influences the plant community. There is little information on forage productivity, carrying capacity and the associated community types that develop through succession or from disturbance including grazing. This lack of information makes it difficult to develop management prescriptions. As a result "carrying capacity guides" are being developed for each natural subregion in the province to provide a framework that would easily group the vegetative community types. This classification system is designed to be used by field staff to assess carrying capacity and evaluate range health on lands within each subregion.

This second approximation addresses the most extensive and common grasslands, shrubland, and deciduous plant communities in the Central Parkland. Approximately 20 new communities have been formed since the first approximation. This guide represent 110 community types, these types are split into:

A. Native grasslands (44 types)
B. Tame/ Industrial grasslands (10 types)
C. Native shrublands (27 types)
D. Deciduous (17 types)
E. Conifer (3 types)
F. Conditional communities (2 types)
G. Modified communities (7 types)

The dominant plant species, canopy cover, environmental conditions, response to grazing, forage production and carrying capacity are outlined for each type.

Acknowledgments

In January 1999 the Rangeland Health Assessment Project was initiated. Its purpose was to coordinate the development of rangeland health assessment methods and ecological site descriptions for both forested and grassland dominated rangelands in the province and transfer the new technology (awareness, information and tools) to livestock producers, staff and other stakeholders. At this time a website (ESD) was also developed to store the rangeland ecological data, but there was insufficient funds to develop hard copy reports from the website. In 2005, funding was provided by Prairie Farm Rehabilitation Administration (PFRA) of Agriculture and Agri-Food Canada through the technical assistance objective of the Green Cover program and hard copy pdf documents are now available from the ESD website.

This document "Range Plant Communities and Range Health Assessment Guidelines for the Central Parkland Subregion of Alberta, 2nd approximation" is a compilation of the ecological site, ecosite phase and plant community information from the website. This guide encompasses the work of Harry Loonen and Richard Ehlert who worked on the first grassland plant communities. It also tries to build on "A preliminary Classification of Plant Communities in the Central Parkland Natural Sub-region of Alberta" done by Wheatley and Bentz (2002).

Thanks to Ron McNeil (Landwise Inc.) and range agrologists; Harry Loonen, Felix Gebbink, Tanya Silzer, and Jill Burkhardt whose insight of the Central Parkland helped us build the range site table, as well as contribute important information about the plant communities. Also a special thanks to Blair Watke for developing the figures found in this document.

1.0 Introduction

The province of Alberta is covered by a broad spectrum of vegetation regions from prairie in the south, to alpine vegetation in the mountains and dense forests in the central and northern parts of the province. These broad vegetation regions have been classified into six natural regions and 20 subregions (Natural Regions Committee 2006). Within each subregion, there are groups of plant communities which exist under similar, localized, environmental conditions and can be further influenced by human impacts. Sustainable management of these subregions requires an understanding of the ecology of the site as well as the ability to recognize the vegetative communities that have similar productivity and response to disturbance.

Vegetative communities in the province of Alberta are highly regarded by most resource managers for their ability to provide a wide variety of benefits. They are a classic example of multiple use land, providing summer range for livestock, prime habitat for many species of wildlife, productive watersheds and recreational areas.

The purpose of this guide was to develop a framework that would easily group the plant community types utilized by livestock in the Central Parkland Natural Subregion of the province and provide ecologically sustainable stocking rate information. Plant communities are grouped into a hierarchal system based on ecology. These groupings include successional communities which occur under natural succession or disturbance such as fire, or grazing operations. All of the known relationships among communities are described within this guide in table format and/or schematically. Additionally, each known plant community is described in detail.

This classification system can be used by field staff to assess the ecology and sustainable stocking rate of sites in order to develop management prescriptions on lands within each subregion.

2.0 Overview

The Central Parkland Natural Subregion is one of three Natural Subregions in the Parkland Natural Region, along with Foothills Parkland and Peace River Parkland (Achuff 1994). The Central Parkland Natural Subregion is the most extensive out of the Parkland Natural Region. It is located in east- central Alberta, in a broad arc occupying a region between the Dry Mixedwood Natural Subregion to the west and north, and the Foothills Fescue, Foothills Parkland and Northern Fescue Natural Subregions to the south (Figure 1). The Central Parkland Natural Subregion includes over 50,000 km^2, much of it under cultivation (Natural Regions Committee 2006). Very few remnants of native vegetation are left in the Central Parkland making proper management of these sites all the more crucial (Figure 3).

Figure 1. The Central Parkland and surrounding Natural Subregions portrayed with a Hillshade effect.

Within the Central Parkland Natural Subregion undulating till plains and hummocky uplands are the dominant landforms. Lacustrine and fluvial deposits are common and there are some significant eolian deposits. Orthic Black Chernozems are typically associated with grasslands and open woodlands in the Central Parkland Natural Subregion (Table 1). Solonetzic soils occupy significant areas (about 15 per cent) of the central low-relief plain, with a further 20 to 30 per cent of soils having Solonetzic properties (Natural Regions Committee 2006). Forested areas commonly have Orthic Dark Gray Chernozemic and Dark Gray Luvisolic soils. These soils are uncommon in the southern part of the Natural Subregion, but become increasingly common to the north and occur on about 30 per cent of landscapes along the northern boundary which are correlated with the Soil Correlation Areas.

Table 1. Key distinguishing features of the Central Parkland Natural Subregion compared with neighbouring natural subregions.

Natural Subregion	Dominant Soils	Dominant Vegetation	General Climate compared to Central Parkland
Central Parkland	Black Chernozemic	Plains rough fescue and Aspen groves	Higher precipitation and lower evaporation. Similar temperatures to Northern Fescue (Achuff 1994).
Northern Fescue	Dark Brown Chernozemic and Dark Brown Solonetz	Western porcupine grass and Plains rough fescue	Cold, continental, dry, few Chinooks
Foothills Fescue	Black Chernozemic	Foothills rough fescue	Moister; less evaporation; far more subject to chinooks. Higher frequency of snowfall in late winter and early spring
Foothills Parkland	Black Chernozemic (thick)	Plains rough fescue and Porcupine grass	Cooler and moister
Dry Mixedwood	Grey Luvisolic	Aspen with a variable understory dominated by Rose, Beaked hazelnut, Saskatoon, Tall forbs and Marsh reed grass.	Cooler and moister.

The Central Parkland Natural Subregion boundaries correspond closely to the boundaries of the Agricultural Regions of Alberta Soil Information Database (AGRASID) Soil Correlation Areas (SCAs) 7, 9, northeast portion of 4 and the east and south sections of 10 (Figure 2). The south western portion of the Central Parkland is associated with SCA 9, the south east portion is associated with SCA 7 and 4, while the northern portion is associated with SCA 10. The boundaries of Natural Subregions and SCA are different in some locations, as noted below.

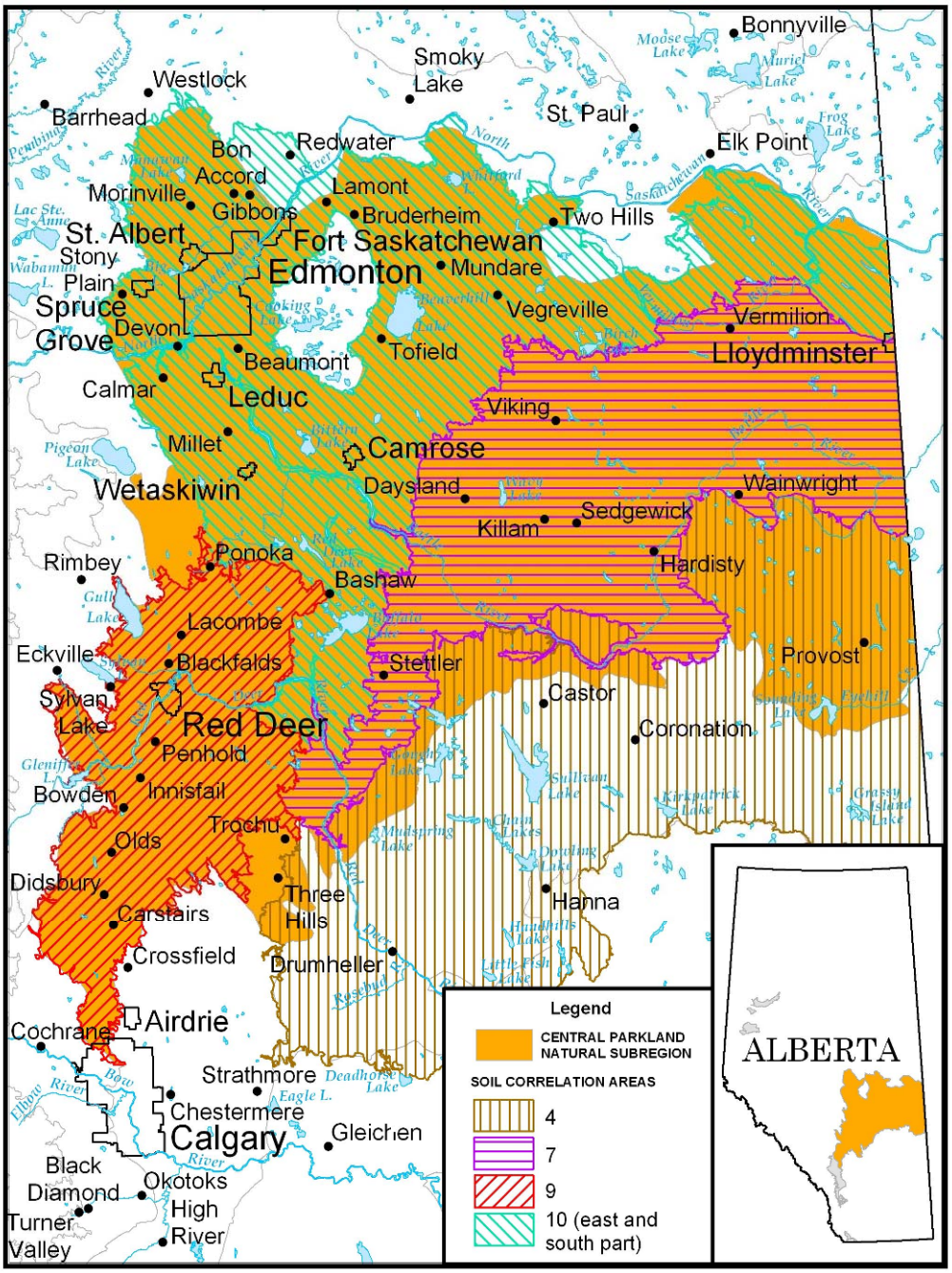


Figure 2. Central Parkland Natural Subregion in east- central Alberta in relation to Soil Correlation Areas 7, 9, and east and south part of 10.

The Central Parkland Natural Subregion includes 12 Ecodistricts (Ecodistricts are based on distinct physiographic and/or geologic patterns). They are distinguished by similar patterns of relief, geology, geomorphology and genesis of parent material (Figure 3). An analysis of the AGRASID soil information database was conducted for all Soil Landscape Models in each of the twelve Ecodistricts in the Central Parkland Natural Subregion. Soil series that comprise 1 per cent or more of the area of the Ecodistrict are reported in Table 4. The principal soil series are identified for each Ecodistrict, including soil classification, parent material, and applicable ecological range site (Table 4). The 12 Ecodistricts are identified in AGRASID 3.0 and depicted in Figure 3 (ASIC 2001) (Nikiforuk et al. 1994).

Figure 3. Ecodistricts in the Central Parkland Natural Subregion.

The area south of Wainwright, including the Provost and Ribstone Plain Ecodistricts (Figure 3), is dominated by aspen poplar groves, which are characteristic of the Central Parkland Natural Subregion. However, the Dark Brown soils in these Ecodistricts are characteristic of the Northern Fescue Natural Subregion (Figure 1), which is located immediately to the south.

The southern fringe of the Central Parkland, from Three Hills in an arc trending northeast and east near the Battle River, represents another inconsistency between mapping of Natural Subregions and Soil Correlation Areas. The general vegetation expression is of the Central Parkland, while the soils are generally Dark Brown and associated with the Northern Fescue Natural Subregion (Figure 1).

The area immediately north and west of Ponoka (Figure 3), which is located in the northern-most portion of the Red Deer Plain Ecodistrict is dominated by Dark Gray Chernozemic with some Luvisolic soils that indicate a transition to the Dry Mixedwood Natural Subregion (Figure1).

Mapping of both Natural Subregions and Soil Correlation Areas recognize the Cooking Lake Upland, located between Edmonton and Beaverhill Lake (Figure 1), as an island of the Dry Mixedwood Natural Subregion surrounded by the Central Parkland Natural Subregion

3.0 Climate

The climate in the Central Parkland Natural Subregion is characterized by a mean annual temperature of 2.3 degrees Celsius (^{o}C), with an average summer temperature of 16.5 ^{o}C, and an average winter temperature of -14.7^{o}C (Natural Regions Committee 2006). The mean annual precipitation is 441 mm, with approximately 66 per cent falling during the growing season.

A regional climate analysis was prepared for this Central Parkland Range Plant Community Guide using the Canadian Climate Normals for the 1971 - 2000 period (Environment Canada, 2002). The climate stations were assigned to the most appropriate Soil Correlation Area in the Central Parkland, and the average climate values were computed for each relevant Soil Correlation Area (Table 2). Tables 7 through 9 summarize data for climate stations within each of the three Soil Correlation Areas (7, 9 and 10 East) of the Central Parkland Natural Subregion.

The Canadian Climate Normal Analysis used in this report indicates the mean daily temperature ranges from 2.6 C in SCAs 7 and 10E, to 3.1 C in SCA 9, in an area (Carstairs to Ponoka) that is more influenced by occasional chinooks. The annual precipitation is also highest in SCA 9, at 477 mm, compared with a low of 429 mm in SCA 7. The growing degree days are highest in SCA 7 (1500 degree days >5 C) and lowest in SCA 9 (1304 degree days >5 C) (Table 2). Average climate values are also compared to those in neighboring Natural Subregions, including the Foothills Parkland, Dry Mixedwood, Northern Fescue, and Foothills Fescue North (Table 3).

Table 2. Climate comparison for the Central Parkland and the Soil Correlation Area within the Natural Subregion.

SCA	Description of Area	Mean Daily Temp. (^{o}C)	Total ppt. (P) (mm)	Mean ppt. as rain (%)	% of ppt. from May to Sept.	Degree Days > 5^{o}C
7	Southeast portion of the Central Parkland (Stettler to Lloydminster)	2.6	429.0	75.4	69.4	1499.6
9	Central Parkland South (Carstairs to Ponoka)	3.1	477.2	77.5	74.1	1304.2
10 East	Central Parkland (Ponoka, Edmonton, Two Hills, and east)	2.6	466.8	77.0	71.4	1426.5
Average for the Central Parkland		**2.8**	**457.7**	**76.6**	**71.6**	**1410.1**

Table 3. Climate comparison for the Central Parkland and surrounding Natural Subregions, based on Canadian Climate Normals for the 1971-2000 period.

Natural Subregion	Mean Daily Temp. (^{o}C)	Total ppt. (P) (mm)	Mean ppt. as rain (%)	% of ppt. from May to Sept.	Degree Days > 5^{o}C
Foothills Parkland	4.5	614	58	57	1355
Northern Fescue	2.5	404	75	70	1450
Foothills Fescue North	3.8	416	76	72	1505
Dry Mixedwood	2.5	524.3	74.5	70.0	1386.9

4.0 Correlation of Soils and Ecological Sites

The diverse landscape of the Central Parkland Natural Subregion is correlate with diverse soil associations. The Central Parkland encompasses soil correlation areas (SCA) 7, 9, northeast portions of 4 and southern portions of 10.

Major Soil Orders and Great Groups in the Central Parkland Natural Subregion:

Black and to the lesser extent Dark Brown soils dominate in the Central Parkland Natural Subregion grasslands while Dark Grey Chernozems occur under aspen stands. Chernozemic soils

are well- to imperfectly-drained soils that have developed under grassland communities. They are characterized by a dark-coloured surface (A) horizon that is at least 10 cm thick, resulting from the accumulation of debris and decomposition of organic matter derived from grasses and forbs. The A horizon of Black Chernozems has a colour value darker than 3.5 moist and dry. Chroma is usually 1.5 or less dry. The soil climate is sub-humid. An important distinction also includes Ah horizon thickness.

In the Central Parkland, Ah horizons normally are less than 20 cm in thickness on an average slope position, and hence, are loosely termed Orthic Black soils. Thick Black Chernozems predominate in the Central Parkland where growing conditions are cooler and moister.

Regolsolic soils occur to a minor extent. Regosols lack a B horizon, and may also be characterized by a shallow A horizon. Regosols are weakly developed soils for many reasons, which can include development on young geologic materials (floodplains or sand dunes), or in unstable locations, such as steep slopes, active floodplains or locations prone to wind erosion.

Solonetzic soils contain a high proportion of sodium in the subsoil and they are characterized by a hardpan layer in the subsoil that is massive and hard when dry, and impervious and very sticky when wet. They are usually associated with areas of former saline and sodic groundwater discharge, but they can also occur where sodium-rich bedrock material occurs at or near the soil surface.

Gleysolic soils are subject to periodic flooding or prolonged wetting, and typically lack oxygen during a portion, or most, of the growing season. Gleysols are often nutrient-poor due to denitrification, and because decomposition is hindered by wetness. Gleysols are associated with wetlands enriched by either groundwater discharge or surface-water collection.

Luvisolic soils develop under the Central Parkland aspen stands and are characterized by clay translocation.

Soils of the Ecodistricts in the Central Parkland Natural Subregion

The major soil series and associated Ecological/ Range Sites (ERS) for each Ecodistrict in the Central Parkland Natural Subregion are summarized in Table 4, listed generally from southwest to northeast.

Table 4. Principal soil series and associated ecological range sites or Grassland Vegetation Inventory (GVI) site types by Ecodistrict, in the Central Parkland Natural Subregion.

Ecodistrict	Major Soil Series	Soil Subgroup	Parent Material	ERS or GVI Site Type
Olds Plain	ATL (Antler)	Orthic Black	glacial till	Lo
	LPN (Lonepine)	Orthic Black	glaciolacustrine over till	Lo
	CYG (Cygnet)	Eluviated Black	glacial till	Lo
	DDY (Didsbury)	Orthic Black	glacial till	Lo

Ecodistrict	Major Soil Series	Soil Subgroup	Parent Material	ERS or GVI Site Type
	PED (Penhold)	Orthic Black	glaciolacustrine	Lo
	TWS (Tweedsmuir)	Orthic Black	glaciofluvial	Sy
	MKV (Markerville)	Orthic Dark Gray	glacial till	Lo
	MYK (Mynarski)	Black Solodized Solonetz	glaciolacustrine	BlO, Lo
Red Deer Plain	PED (Penhold)	Orthic Black	glaciolacustrine	Lo
	HBM (Hobbema)	Eluviated Black	glaciolacustrine over till	Lo
	EAT (Evarts)	Eluviated Black	glaciolacustrine	Cy
	ZWA (Water)	Water Body	water	Len
	AGS (Angus Ridge)	Eluviated Black	glacial till	Lo
	CYG (Cygnet)	Eluviated Black	glacial till	Lo
	FLU (Falun)	Orthic Dark Gray	glacial till	Lo
	POK (Ponoka)	Eluviated Black	glaciolacustrine	Lo
	LPN (Lonepine)	Orthic Black	glaciolacustrine over till	Lo
	ATL (Antler)	Orthic Black	glacial till	Lo
	TWS (Tweedsmuir)	Orthic Black	glaciofluvial	Sy
	MKV (Markerville)	Orthic Dark Gray	glacial till	Lo
	MGS (Morningside)	Orthic Black	glaciolacustrine	Lo
	SCO (Strathcona)	Orthic Black	gravelly glaciofluvial	SwG, Gr, Sy
	NIB (Niobe)	Black Solod	glaciolacustrine over till	BlO, Lo
	TUT (Tuttle)	Orthic Humic Gleysol	glaciolacustrine	Len
Pine Lake Upland	CYG (Cygnet)	Eluviated Black	glacial till	Lo
	AGS (Angus Ridge)	Eluviated Black	glacial till	Lo
	ATL (Antler)	Orthic Black	glacial till	Lo
	MKV (Markerville)	Orthic Dark Gray	glacial till	Lo
	FLU (Falun)	Orthic Dark Gray	glacial till	Lo
	TWS (Tweedsmuir)	Orthic Black	glaciofluvial	Sy
	LPN (Lonepine)	Orthic Black	glaciolacustrine over till	Lo

Ecodistrict	Major Soil Series	Soil Subgroup	Parent Material	ERS or GVI Site Type
Bashaw Upland	EOR (Elnora)	Orthic Black	glacial till	Lo
	AGS (Angus Ridge)	Eluviated Black	glacial till	Lo
	ZWA (Water)	Water Body	water	Len
	CMO (Camrose)	Black Solodized Solonetz	glacial till	BlO, Lo
	UKT (Ukalta)	Orthic Black	glaciofluvial over till	Sy
	PHS (Peace Hills)	Orthic Black	glaciofluvial	Sy
	MDR (Mundare)	Orthic Black	fluvial eolian	Sa, CS
	HBM (Hobbema)	Eluviated Black	glaciolacustrine over till	Lo
Leduc Plain	AGS (Angus Ridge)	Eluviated Black	glacial till	Lo
	HBM (Hobbema)	Eluviated Black	glaciolacustrine over till	Lo
	POK (Ponoka)	Eluviated Black	glaciolacustrine	Lo
	RLV (Rolly View)	Orthic Dark Gray	glacial till	Lo
	WTB (Winterburn)	Orthic Dark Gray	glaciofluvial	Lo
	MMO (Malmo)	Eluviated Black	glaciolacustrine	Cy
	MCO (Mico)	Orthic Dark Gray	glaciolacustrine	Cy
	PHS (Peace Hills)	Orthic Black	glaciofluvial	Sy
	NVR (Navarre)	Gleyed Black	glaciolacustrine	Sb, Cy
	KVG (Kavanagh)	Black Solodized Solonetz	residual	BlO, TB, BdL
	UCS (Uncas)	Dark Gray Luvisol	glacial till	Lo
	CMO (Camrose)	Black Solodized Solonetz	glacial till	BlO, Lo
	PRM (Primula)	Eluviated Eutric Brunisol	glaciofluvial	Sa, CS
	MDR (Mundare)	Orthic Black	fluvial eolian	Sa, CS
	WKN (Wetaskiwin)	Black Solodized Solonetz	glaciolacustrine	BlO, Cy
	ZOR (Organic)	Organic Order	fen or bog	Len
	DUG (Daugh)	Black Solonetz	glaciolacustrine	BlO, Cy
Daysland Plain	CMO (Camrose)	Black Solodized Solonetz	glacial till	BlO, Lo
	KLM (Killam)	Black Solod	glacial till	BlO, Lo

Ecodistrict	Major Soil Series	Soil Subgroup	Parent Material	ERS or GVI Site Type
	HER (Heisler)	Solonetzic Black	glacial till	Lo
	ZWA (Water)	Water Body	water	Len
	NRM (Norma)	Solonetzic Black	glacial till	Lo
	EOR (Elnora)	Orthic Black	glacial till	Lo
	AGS (Angus Ridge)	Eluviated Black	glacial till	Lo
	SHS (Shonts)	Black Solodized Solonetz	glacial till over softrock	BlO, TB, BdL
	IRM (Irma)	Orthic Black	glaciofluvial	Sy
	ROS (Rosebank)	Orthic Black	glaciofluvial over till	Sy
	GDB (Gadsby)	Black Solodized Solonetz	glaciolacustrine	BlO, Cy
	DYD (Daysland)	Black Solod	glacial till	BlO, Lo
	ZGW (Gleysol)	Gleysolic Order	undifferentiated	Len
Andrew Plain	AGS (Angus Ridge)	Eluviated Black	glacial till	Lo
	NRM (Norma)	Solonetzic Black	glacial till	Lo
	HBM (Hobbema)	Eluviated Black	glaciolacustrine over till	Lo
	CMO (Camrose)	Black Solodized Solonetz	glacial till	BlO, Lo
	ZGW (Gleysol)	Gleysolic Order	undifferentiated	Len
	POK (Ponoka)	Eluviated Black	glaciolacustrine	Lo
	PHS (Peace Hills)	Orthic Black	glaciofluvial	Sy
	WHF (Whitford)	Black Solonetz	glacial till	BlO
	TWS (Tweedsmuir)	Orthic Black	glaciofluvial	Sy
	RLV (Rolly View)	Orthic Dark Gray	glacial till	Lo
	NVR (Navarre)	Gleyed Black	glaciolacustrine	Sb, Cy
	RDW (Redwater)	Orthic Dark Gray	glaciofluvial	Sy
Sedgewick Plain	HER (Heisler)	Solonetzic Black	glacial till	Lo
	EOR (Elnora)	Orthic Black	glacial till	Lo
	IRM (Irma)	Orthic Black	glaciofluvial	Sy
	ROS (Rosebank)	Orthic Black	glaciofluvial over till	Sy
	KLM (Killam)	Black Solod	glacial till	BlO, Lo

Ecodistrict	Major Soil Series	Soil Subgroup	Parent Material	ERS or GVI Site Type
	ZGW (Gleysol)	Gleysolic Order	undifferentiated	Len
	AMT (Amity)	Orthic Black	glaciofluvial	Lo, Sy
Vermilion Upland	EOR (Elnora)	Orthic Black	glacial till	Lo
	AGS (Angus Ridge)	Eluviated Black	glacial till	Lo
	UCS (Uncas)	Dark Gray Luvisol	glacial till	Lo
	RLV (Rolly View)	Orthic Dark Gray	glacial till	Lo
	BSU (Brosseau)	Orthic Dark Gray	residual	TB
	ACE (Alliance)	Orthic Black	glaciolacustrine over till	Lo
	CPL (Camp Lake)	Orthic Black	glaciofluvial	Sy, SwG, Gr
	IRM (Irma)	Orthic Black	glaciofluvial	Sy
	ZWA (Water)	Water Body	water	Len
	SLW (Slawa)	Eluviated Black	fine glacial till	Cy
Lloydminster Plain	BVH (Beaverhills)	Orthic Black	glacial till	Lo
	EOR (Elnora)	Orthic Black	glacial till	Lo
	MDR (Mundare)	Orthic Black	fluvial eolian	Sa, CS
	IRM (Irma)	Orthic Black	glaciofluvial	Sy
	BEL (Bellshill)	Orthic Black	glaciofluvial	Lo
	AGS (Angus Ridge)	Eluviated Black	glacial till	Lo
	GBL (Gabriel)	Dark Gray Luvisol	glaciofluvial over till	Sy
	HLW (Heliwell)	Orthic Dark Gray	glaciofluvial	Sa, CS
	UKT (Ukalta)	Orthic Black	glaciofluvial over till	Sy
	MSW (Mooswa)	Eluviated Black	glaciofluvial	Sy
	CPL (Camp Lake)	Orthic Black	glaciofluvial	Sy, SwG, Gr
	HBM (Hobbema)	Eluviated Black	glaciolacustrine over till	Lo
	ACE (Alliance)	Orthic Black	glaciolacustrine over till	Lo
	PHS (Peace Hills)	Orthic Black	glaciofluvial	Sy
Ribstone Plain	WWT (Wainwright)	Orthic Dark Brown	fluvial eolian	Sa
	HCH (Houcher)	Rego Dark Brown	fluvial eolian	Sa
	MET (Metisko)	Orthic Dark Brown	glaciofluvial	Sy
	HND (Hughenden)	Orthic Dark Brown	glacial till	Lo

Ecodistrict	Major Soil Series	Soil Subgroup	Parent Material	ERS or GVI Site Type
	DCY (Dolcy)	Orthic Dark Brown	glaciofluvial over till	Sy
	CNN (Coronation)	Orthic Dark Brown	glaciolacustrine	Lo
	ERT (Edgerton)	Orthic Regosol	eolian	Sa, CS
Provost Plain	HND (Hughenden)	Orthic Dark Brown	glacial till	Lo
	CNN (Coronation)	Orthic Dark Brown	glaciolacustrine	Lo
	PRO (Provost)	Orthic Dark Brown	glaciolacustrine over till	Lo
	DCY (Dolcy)	Orthic Dark Brown	glaciofluvial over till	Sy
	MET (Metisko)	Orthic Dark Brown	glaciofluvial	Sy

5.0 Key to Ecological/ Range Sites

Tables 10, 11, 12 in the Appendix provide the complete listing of soil series for SCAs 7, 9 and 10. They are organized by range site/GVI site type, and include a brief soil or landscape description (McNeil 2003). Table 12 provides the soil series for the entire area in SCA 10, which includes portions of the Dry Mixedwood Natural Subregion, located generally to the west and north of the Central Parkland Natural Subregion, and the Cooking Lake Upland Ecodistrict. Soil Series codes in bold in Tables 10, 11, 12 occur in more than one ecological range site (ERS) or GVI site type. All soil series are defined in more detail in the Alberta Soil Names File (Brierley et al. 2006).

Range sites are divided into three groups based on their main defining feature of landscape, soil or texture.

Group 1 – Ecological/ Range Sites Defined Mainly by Landscape

Badlands/Bedrock (BdL): Applies to all inclined to steeply sloping landscapes with greater than 10% bedrock exposures of softrock or hardrock. Slopes generally range from 15% to 60% (in isolated cases 7% to 100%).

Overflow (Ov): Applies to non-saline Chernozemic (soils with A, B and C horizons) and/or Regosolic soils (soils that lack a B horizon >5 cm thick, and may lack an A horizon) on landscapes that are low-relief inclines in valley or basinal settings. Overflow sites are usually fan or apron deposits, where upslope streams enter lowland areas and experience a marked decrease in gradient. Slopes generally range from 2% to 9% (in isolated cases from 0.5% to 15%). Overflow occurs only on lower slope positions or adjacent to stream(s), and the percentage of eligible overflow ranges from 10% to 50% per SLM (specific rules within each SCA).

Riparian (Ri): Applies to all stream channels and floodplains. True riparian areas only include the valley floor (from bottom of bank to bottom of bank on the other side of the valley).

Thin Breaks (TB): Applies to: 1) all steeply-sloping landscapes with less than 10% bedrock exposures; 2) largely vegetated areas with bedrock at or near (within 1.0 m of) the surface.

Group 2 – Ecological/ Range Sites Defined Mainly by Soil Features

Blowouts (BlO): Applies to all SLMs where soils from the Solonetzic order are dominant (>50%) or co-dominant (30 to 50%). Solonetzic soils have an impervious hardpan layer (Bnt horizon) in the subsoil that is caused by excess sodium (Na+). The land surface is frequently characterized by eroded pits.

Limy (Li): Applies to all immature or eroded soils with free lime (calcium carbonates) at the soil surface or in the B horizon. Free lime is detected by effervescence when soil is treated with 10% hydrochloric acid (HCl). Li soils include Rego or Calcareous Chernozemics, eroded phases, and subgroups from the Regosolic order if they are calcareous.

Sub-irrigated (Sb): Applies to all Gleyed, non-saline, medium to very coarse textured soils. Gleyed soils occur where the water table occurs near the soil surface, but does not often occur above the soil surface. Gleyed subgroups have faint to distinct mottles within 50 cm, or prominent mottles between 50 and 100 cm.

Saline Lowland (SL): Applies to all salt-enriched soils, including Saline phase Chernozemic, Saline phase Regosolic, and Saline phase Gleysolic soils. Saline phase soils have an electrical conductivity greater than 4.0 dS/m, which retards most plant growth.

Wetlands (WL): Applies to all non-saline or weakly-saline of the Gleysolic and Organic orders. Gleysolic soils occur in seasonal to semi-permanent wetlands. They are typified by dull colours or prominent mottles with 50 cm, due to prolonged periods of intermittent or continuous saturation, and the lack of oxygen in the soil. Organic soils are dominated by the accumulation of decomposing peat material derived mainly from sedges and reeds.

Group 3 – Ecological/ Range Sites Defined Mainly by Textural Groupings

Soils are made up of varying components of sand, silt and clay, with the sum of the three equal to 100%. Soils may also include particles larger than 2.0 mm, or coarse fragments (Table 5).

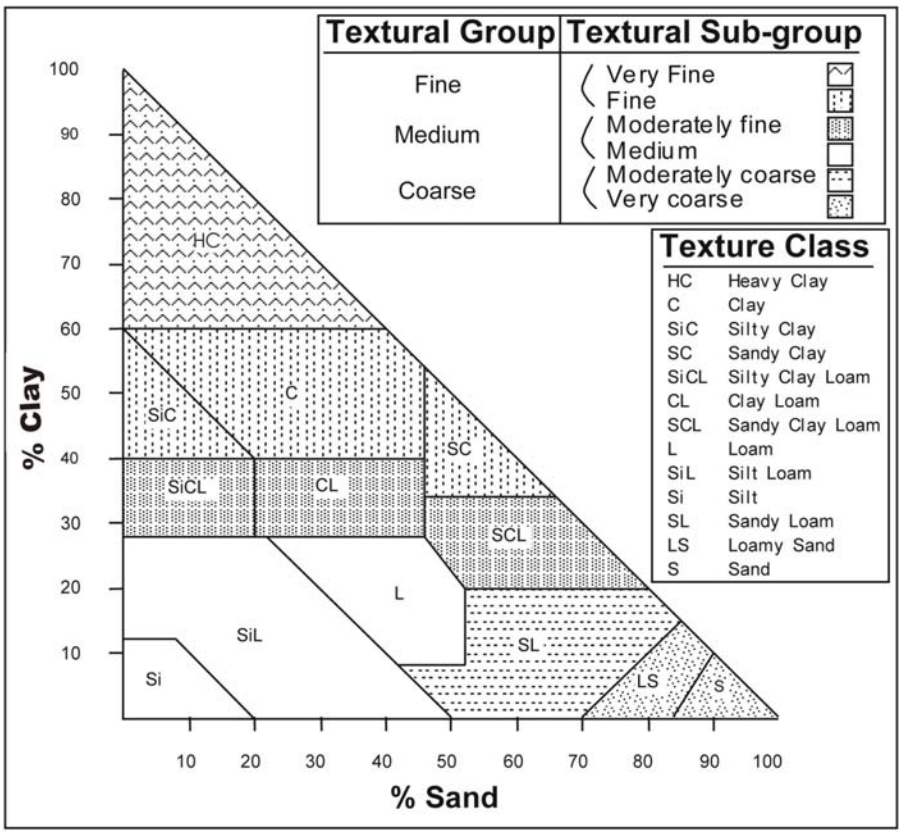


Figure 4. Soil textures and their Relationship to Ecological/ Range sites

Table 5. Definition of particle sizes.

Category	Particle	Diameter (mm)
Components of soil texture	clay	<0.002
	silt	0.002 to 0.05
	sand	0.05 to 2
Coarse fragments	gravel	2 to 75
	cobbles	75 to 250
	stones	250 to 600
	boulders	>600

Clayey (Cy): Applies to all non-saline and non-gleyed Chernozemic soils (soils with A, B and C horizons), and non-saline and non-gleyed Regosolic soils (soils that lack a B horizon >5 cm, and may lack an A horizon) with soil textures in the fine or very fine (i.e., clay and silty clay) textural subgroups (>40% clay) (Figure 4).

Loamy (Lo): Applies to all non-saline and non-gleyed Chernozemic soils (soils with A, B and C horizons), and non-saline and non-gleyed Regosolic soils (soils that lack a B horizon >5 cm, and

may lack an A horizon) with soil textures in the medium and moderately fine textural subgroups (i.e., loam and clay loam).

Sandy (Sy): Applies to all non-saline and non-gleyed Chernozemic soils (soils with A, B and C horizons), and non-saline and non-gleyed Regosolic soils (soils that lack a B horizon >5 cm, and may lack an A horizon) with soil textures in the moderately coarse (sandy loam) textural subgroup (Figure 4).

Sands (Sa): Applies to all non-saline and non-gleyed Chernozemic soils (soils with A, B and C horizons), and non-saline and non-gleyed Regosolic soils (soils that lack a B horizon >5 cm, and may lack an A horizon) with soil textures in the very coarse (loamy sand) textural subgroup. Sa does not apply to duned landscapes (Figure 4).

Choppy Sandhills (CS): Applies to all non-saline and non-gleyed Chernozemic soils (soils with A, B and C horizons), and non-saline and non-gleyed Regosolic soils (soils that lack a B horizon >5 cm, and may lack an A horizon) with soil textures in the very coarse (loamy sand) textural subgroup.

Gravel (Gr): Applies to any soil with less than 20 cm of a surface mantle of any textural class over very gravelly or very cobbly (>50% gravel or cobbles) material.

Shallow-to-Gravel (SwG): Applies to any soil with 20 to 50 cm of a surface mantle of any textural class overlying gravelly or very gravelly or cobbley to very cobbley (>20% gravel or cobbles) material.

The Central Parkland Natural Subregion is a transition zone between the boreal and the grasslands. The Plant Community Guides for the forested parts of the province use Ecological Site and Ecosite Phase with the plant communities as the ecosystem classification structure. However, in the Grasslands Natural Region, range sites have been used to classify plant communities because of the extensive soils work done in this part of the province. With this guide we have attempted to bridge this by developing a table in the appendix that outlines which plant communities are associated with the range sites. A number of range sites may be associated with one plant community and this is indicated by the dominant range site listed first followed by the significant range sites listed in brackets (Table 13).

6.0 Approach and Methods of Classification

Approach: Ecological classification hierarchy and terminology

The system of classification in this guide was initially based on the community type approach of Mueggler (1988). Mueggler's system was chosen over the habitat type approach (Daubenmire 1952) or ecosystem association approach (Corns and Annas 1986) because it could classify plant communities regardless of their successional status. However, as the philosophy of rangeland health and proper functioning condition of a site evolved, it became apparent (through data analysis) that there was a need to also organize the various plant communities based on their

response to disturbance (i.e. disturbance vs. natural succession) within an area under similar environmental influences.

Therefore it was determined that the ecosystem classification system developed by Corns and Annas (1986) and Beckingham et al. (1996) could accommodate this additional requirement. Thus, the new system developed for rangelands is a combination of Mueggler (1988) and Beckingham et al. (1996). Consequently, this guide adopts a similar ecological unit classification hierarchy (ecosite, ecosite phase, plant community). In an effort to first, link the hierarchical system with the historic rangeland system, and second, to create a provincially standardized rangeland approach, slightly different classification terminology was developed. The new terms ecological site and ecological site phase (replacing Beckingham et al. [1996] ecosite and ecosite phase terms respectively), provide subtle distinction to recognize the blending of the old systems and still be recognizable to familiarize readers with the original terminology.

Methods: Plant community classification

Sampling for this guide occurred within the Central Parkland Natural Subregion. This guide outlines the classification of over 1000 plots. The procedure for inventory of plots followed the Range Survey Manual (ASRD 2007) and uses the MF5 form. For grasslands, a plot consists of ten randomly selected $1/4m^2$ microplots to record the canopy cover of shrubs and ten nested $1/10m^2$ microplots to record the canopy cover of forbs and grass across a 30m transect. The data for each site was analyzed using the multivariate techniques of classification and ordination. Classification is the assignment of samples to classes or groups based on the similarity of species. A polythetic agglomerative approach was used to group the samples. This technique assigns each sample to a cluster which has a single measure. It then agglomerates these clusters into a hierarchy of larger and larger clusters until finally a single cluster contains all the samples (Gauch 1982). Cluster analysis and Euclidean distance was performed in PCORD. The groupings generated in cluster analysis were overlain on the site ordination to determine final groupings.

Ordination was used to find relationships among species, communities and environmental variables. Ordination reduces the dimensionality of the data to 1-3 most important axes to which environmental gradients can be assigned. The ordination technique used in the analysis of the data was DECORANA (Detrended Correspondence Analysis). DECORANA detrends and rescales the axes thereby reducing the arching and compression of axes problems associated with other ordination techniques (Reciprocal averaging, Principle Components Analysis). Once final groupings were determined on the ordination specific environmental variables can be assigned to the variation outlined on the ordination axes.

Plant community type summaries were generated in Excel, by averaging plant species composition, range in composition, and percent constancy of occurrence, among vegetation inventory plots which were part of a community type. Environmental data was subsequently sorted into the same plant community groupings to create the plant community descriptions outlined in this guide. The number of sample plots on which the description was based is also provided (i.e. n=16).

Ecologically Sustainable Stocking Rates

Ecologically sustainable stocking rates (ESSR) values are suggested for each plant community. These values reflect the maximum number of livestock (i.e. animal unit month [AUM[1]] per area [i.e. ac]) that can be supported by the plant community given inherent biophysical constraints and the ecological goal of sustainable health and proper functioning of the plant community. When the ESSR is multiplied by the area of a plant community polygon the result is termed ecologically sustainable carrying capacity (ESCC), and is expressed as AUMS. Often the ESCC must be adjusted for management factors (i.e. reduced livestock distribution), management goals (i.e. multiple use and values, etc.), drought conditions, and other natural phenomena impacting the site (i.e. forage quality, fire, pests, etc.). This adjusted/reduced value is the ecologically sustainable grazing capacity (ESGC). The ESGC values are not provided in the plant community guide because the necessary adjustments are determined by the rangeland resource manager.

Suggested ESSR values were determined from a combination of clipping studies, long-term rangeland reference area data, estimated production, and historical grazing experience. In order to sustain ecological health and function of the plant community, the ESSR was based on the allocation of up to 25% of total production for forested plant community types, and up to 50% of total production for grass and shrub land types within the Central Parkland Natural Subregion, and the forage requirements one animal unit (i.e. 455 kg or 1000 lb of dry matter per month). The stocking rate ranges provided, are based on total forage production tempered by the forage value of the contributing plant species and the ecological status of the plant community. For example a plant community with high total production but that is mostly composed of unpalatable or unreachable material will have a high end range value based on less than 25% of total production. If this same plant community is of low ecological status, a further reduction is made to the range and the recommended stocking rate to allow for health recovery. The unallocated biomass production (carry over), is needed for the maintenance of ecological functions (i.e. nutrient cycling, viable diverse plant communities, hydrological function, and soil protection, etc.) and plant community services (forage production, habitat maintenance, etc.). The allocation of biomass production in this manner is well established, and supported, by the scientific community and the percent allocation varies with each Natural Subregion (Holechek et al. 1995).

Rangeland Health

Range Health is determined by comparing the functioning of ecological processes on an area (i.e. plant community polygon) of rangeland to a standard Reference Plant Community (RPC) described within an ecological site description. An ecological site is similar to the concept of Range Site, but a broader list of characteristics is described. An ecological site is defined by the Task Group on Unity and Concepts and Terminology (1995) as, "a distinctive kind of land with specific physical characteristics that differs from other kinds of land in its ability to produce a

[1] Animal Unit Month (AUM): the amount of forage required by 1 animal unit for 30 days. It is often expressed as a stocking rate [AUM/ha or ac]. Generally, 1 AUM will require 1000 lbs [455 kg] of dry matter per month that includes a 25% forage loss due to trampling (ASRD 2007).

distinctive kind of amount of vegetation". This guide can be used to determine the appropriate reference range plant community, within an ecological site, for a rangeland health assessment.

Rangeland health assessments are utilized to make a rapid determination of the ecological health of rangeland. We use range health terminology (healthy, healthy with problems, or unhealthy), to rank the ability of rangeland to perform certain ecological functions. These functions include: net primary production, maintenance of soil/site stability, capture and beneficial release of water, nutrient and energy cycling and plant species functional diversity. For a detailed description on how to assess rangeland health for various plant communities please refer to "Rangeland Health Assessment for Grassland, Forest and Tame Pasture" (Adams et al. 2009).

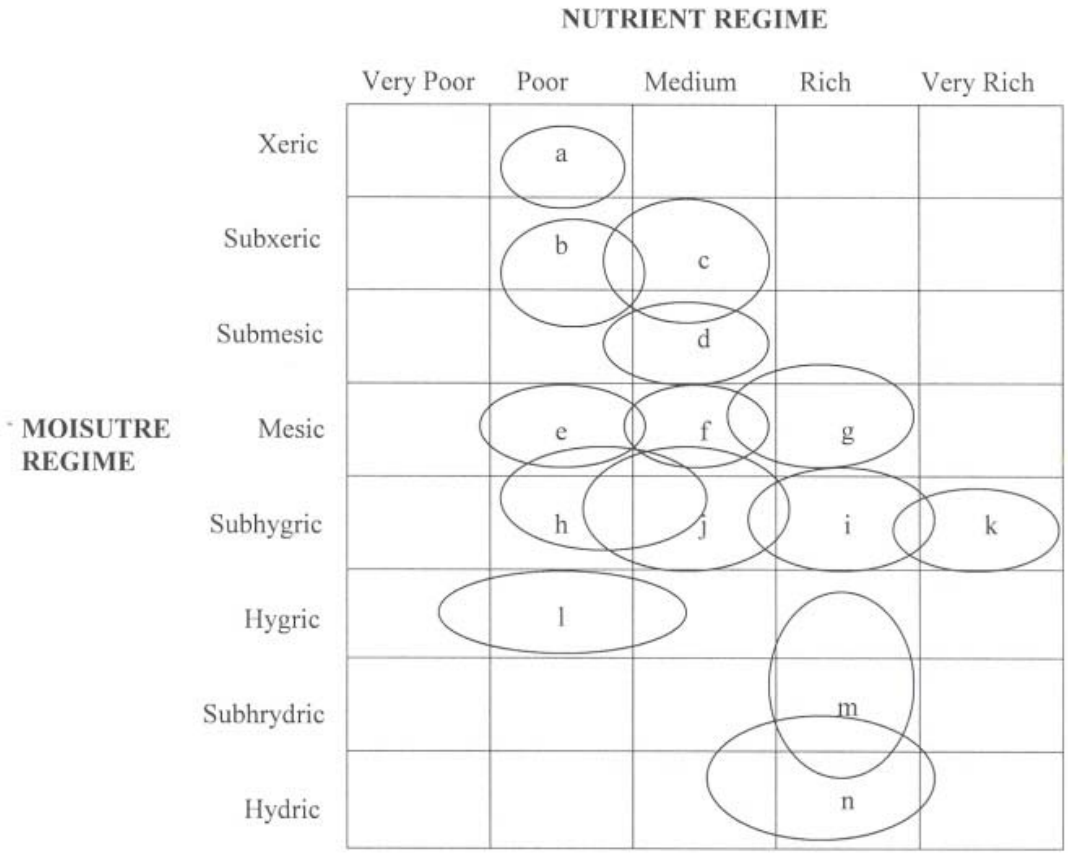
An ecological status score [i.e. the integrity of the plant community composition compared to the reference plant community] has been added to each community type description. These values are based on what is currently known about how a RPC responds to various kinds and levels of disturbance or successional processes. The values indicate how a particular plant community fits in the state and transition model relative to the RPC. If an experienced observer estimates the health of a plant community without completing a health form, (i.e. a small riparian area), these values can be used as a guide. Occasionally there may be two options provided for the ecological status score (i.e. 40 and 27 is listed). This was done to express the range of divergence from the RPC possible for a particular plant community as for example the presence of Kentucky bluegrass or Canada thistle in the community may result a community being a late seral opposed to RPC, and the ecological status score being dropped from 40 to 27, however there is not enough of a successional change to call it a different plant community.

Range management objectives tend to favor the later stages of plant succession (late seral to potential natural community (PNC) or good to excellent range condition) (Adams et al. 2009). Later seral plant communities tend to be superior in the efficient capture of solar energy, cycling of organic matter and nutrients, retaining moisture, supporting wildlife habitat values and in providing the highest potential productivity for the site. In contrast, early seral stages represent plant communities with diminished ecological processes, which are less stable and more vulnerable to erosion and invasion by weeds and non-native species. They also have diminished resource values for livestock forage production, wildlife habitat and watershed protection (Adams et al. 2009). Healthy rangelands perform important ecological functions and provide a broader suite of goods and services. In most cases these late seral plant communities are used as the RPC, but sometimes management goals influence the choice of RPC (i.e. a seral grassland versus re- establishment or successional pathway to a late seral forest community).

7.0 How to Use the Guide

Guidelines for Determining Ecological Sites

This guide is an expansion of the Preliminary Classification of Plant Communities in the Central Parkland Natural Subregion of Alberta (Wheatley and Bentz 2002). Generally, in both guides, ecological units within a subregion are classified by soil correlation area and their position on the edatopic grid [a specific combination of soil moisture and soil nutrient regime] (Figure 5).



Ecological Sites within the Central Parkland Subregion

a = sand dropseed
(xeric/poor)
b = sandgrass/juniper
(subxeric/poor)
c = needle and thread
(subxeric/medium)
d = western porcupine grass
(submesic/medium)
e = saline blowout
((mesic/poor)
f = western wheatgrass
(mesic/medium)
g = rough fescue
(mesic/rich)
h = silver sagebrush
(subhygric/poor)
i = red osier dogwood
(subhygric/rich)
j = foxtail barley
(subhygric medium)
k = horsetail
(hygric/rich)
l = saline lowlands
(hygric/poor)
m = fen
(subhydric/rich)
n = marsh
(hydric/rich)

Figure 5. Edatopic Grid for the Central Parkland Natural Subregion

The information in this guide is presented and named by:

1) Natural Subregion

   CP = Central Parkland

2) Ecological site

   a. Sand dropseed, b. Sandgrass/ Juniper, c. Needle and thread, d. Western porcupine grass, e. Saline blowout, f. Western wheat grass, g. Plains rough fescue/ Snowberry, h. Silver sagebrush, i. Red osier dogwood, j. Foxtail barley, k. Horsetail, l. Saline lowlands, m. Fen

3) C. Ecosite phase
   1. Grassland (A)
   2. Shrubland (C)
   3. Deciduous (D)
   4. Conifer (E)
   5. Industrial (I)
   6. Tame (B)

4) Reference/ Successional Plant Community

i.e. CPA25= (CP) Central Parkland (A) Native grassland (25) sequential number
CPA25= Plains Rough Fescue plant community
- (located in the g: Plains rough fescue/ Snowberry Ecological site).

Note: As additional information is collected and new ecological units are identified and described, an attempt is made to fit them into the pre-existing classification.

To use this guide properly, you must identify the Ecological site and determine the appropriate moisture/ nutrient regime. The main method uses a dichotomous key within the dominant cover categories of native grass and shrubland, tame forage or deciduous.

Step 1: Pick the appropriate category the community type is found within each subregion.

a. The area does not have an overstory tree canopy and has not been cleared and broken, the community will fall under the NATIVE GRASSLANDS and SHRUBLANDS category. To be classified as a shrubland community, there must be at least 20% cover of a shrub.

b. The area has been cleared of trees, broken and seeded down to tame forage species such as smooth brome, or crested wheat grass, the community will be in the TAME GRASS or INDUSTRIAL category.

c. The DECIDUOUS category includes all plant communities that are dominated, [i.e. >70% of the overstory], by deciduous tree species.

Step 2: Go to the appropriate section determined in Step 1 and work through the plant communities. At times, the community in question may not match any of the known/ reported types. When this happens, consider the following information in the detailed community type descriptions.

In the General Description text:

a. The number of plots utilized to describe the community [n= number of plots]. The higher the "n" value [i.e. information available], the greater the level of confidence in the clarity and accuracy of the description.

b. Information about where the community is found on the landscape, response to disturbance, and natural succession. Use this information together with your field experience to determine the likelihood of a similar situation occurring on the site in question.

Under the Plant Composition heading:

a. The mean. This refers to the sum of all the plant species cover divided by the number of samples.

b. The range of a plant species cover. For example, a species with a range of 0-25% may not always be visible on the site, having 0% canopy cover or it may have up to 25% cover.

c. The constancy value. This indicates the percentage of the plots that the species was actually present. So if n=16 and constancy was 75%, then the species occurred in 12 of the 16 plots.

Note: that tree species can be listed in the shrub LAYER (if they act as a shrub).

Step 3. This step is necessary only if you are completing a rangeland health assessment. In order to determine the health status of the site in question, you must decide the appropriate reference plant community (RPC) to compare it to. Depending on the type of disturbance (grazing, oil and gas development, etc.) successional pathways may differ. The RPC is usually the plant community that is at the start of the pathway under minimal or no disturbance (i.e. ungrazed or lightly grazed). Management goals can influence the choice of RPC.

Results and Discussion

The analysis over 1000 plots distinguished 110 community types. Each plant community is given a code, where the first two letters represent the Natural Subregion (CP= Central Parkland). The next letter represents a category such as grasslands or deciduous and finally a sequential number. The plant community types were split into 6 categories (communities that have been modified due to general disturbance are classified under the corresponding vegetation layer):

A. Native grasslands (46 types), B. Tame grasslands (5 types), C. Native shrublands (28 types), D. Deciduous (21 types), E. Conifer (3 types), I. Industrial (5 types) and Conditional communities (2 types)

Key to Plant Community Types for Central Parkland Natural Subregion

1	Site cultivated and seeded to tame forage species	**Tame Pasture/ Industrial**
	Native grass, trees and forbs dominate the site	**2**
2	Native grass dominated community type	**Native Grass**
	Trees or shrubs dominate site (includes juniper as a shrub)	**3**
3	Shrubs dominate the plant community	**Shrubland**
	Deciduous or conifer trees dominate the site	**4**
4	Conifer trees dominate the site	**Conifer**
	Deciduous trees dominate the site	**Deciduous**

Community Key to Tame Pasture/ Industrial

1	Site located on well site or pipiline	**2**
	Site located on range improvement	**3**
2	Sites domianted by timothy	**CPI6 Timothy-Smooth brome**
	Sites dominated or co-dominated by kentucky bluegrass	**4**
3	Site dominated by meadow brome	**CPB4 Meadow brome**
	Site dominated or co-dominated by smooth brome	**7**
4	Sites dominated by creeping red fescue	**CPI2 Creeping red fescue-Kentucky bluegrass**
	Kentucky bluegrass sites co-dominated with wheatgrasses or smooth brome	**5**
5	Sites co-dominated with smooth brome	**CPI5 Smooth brome-Kentucky bluegrass/Dandelion**
	Sites co-dominate with wheatgrasses	**6**
6	Kentucky bluegrass sites co-dominate with northern wheatgrass	**CPI3 Kentucky bluegrass-Northern wheat grass/Dandelion**
	Kentucky bluegrass site co-dominate with slender wheatgrass	**CPI4 Slender wheat grass-Kentucky bluegrass**
7	Site dominated by smooth brome and alfalfa	**CPB1 Alfalfa/Brome-Kentucky bluegrass**
	Site co-dominated by smooth brome and kentucky bluegrass	**8**
8	Snowberry invaded site with kentucky bluegrass and smooth brome codominate	**CPB3 Snowberry/Kentucky bluegrass-Smooth brome**
	Site with kentucky bluegrass and smooth brome codominate not shrub invaded	**CPB2 Kentucky bluegrass- Smooth brome**

Community Key to Deciduous

1	Dry sandy areas with juniper dominating the aspen understory	**2**

Community Key to Deciduous

1	Moister aspen sites co-dominated by balsam poplar or paper birch with snowberry, chokecherry, willow or red osier dogwood, hazelnut or horsetail in the understory	**3**
2	Lightly grazed sites dominated by juniper and sedge in understory	**4**
	Disturbed aspen, juniper plant communities	**19**
3	Aspen stands where snowberry dominates the understory	**5**
	Moist/rich sites with balsam poplar, red osier dogwood, willow, hazelnut, paper birch and horsetail	**6**
4	Aspen stand dominated by juniper and sedge	**CPD1 Aspen/Juniper/Sedge**
	Aspen stand dominated by bearberry, purple oatgrass and sedge	**CPD20 Aspen/Bearberry/Purple oatgrass-Sedge**
5	Sandy loam sites dominated by aspen, snowberry and chokecherry	**7**
	Loamy snowberry dominated sites	**8**
6	Balsam poplar dominated site with hazelnut and red osier dogwood found in the understory	**CPD9 Balsam poplar/Hazelnut-Red osier dogwood**
	Moist sites with Balsam poplar, aspen, red osier dogwood, willow or paper birch	**16**
7	Lightly disturbed aspen sites dominated by snowberry and chokecherry in the understory	**CPD3 Aspen/Snowberry-Choke cherry-Saskatoon**
	Aspen sites dominated by snowberry and chokecherry in the understory which have been repeatedly disturbed by fire	**18**
8	Lightly grazed Aspen, snowberry, rose dominated site	**9**
	Disturbed aspen, snowberry plant community	**17**
9	Lightly grazed aspen, snowberry, rose dominated plant community	**CPD13 Aspen/Snowberry-Rose**
	Aspen, snowberry, awned wheatgrass dominated community	**CPD28 Aspen/Snowberry/Awned wheat grass**
10	Very wet sites with horsetail, reedgrass or willow dominating the understory	**12**
	Slightly drier sites with snowberry and red osier dogwood dominating the understory	**13**
11	Paper birch and buffaloberry dominated community type	**CPD5 Paper birch/Canada buffaloberry**
	Hazelnut dominates the aspen understory	**CPD14 Aspen/Beaked hazelnut**
12	Horsetail dominates the understory	**CPD10 Balsam poplar-Aspen/Red osier dogwood/Horsetail**
	Willow and reedgrass dominates the understory	**14**
13	Disturbed red osier dogwood, snowberry plant communities	**20**
	Ungrazed sites with aspen and balasm poplar dominating the overstory	**21**
14	Willow dominates the understory	**CPD11 Balsam poplar-Aspen/Willow**
	Reedgrass dominates the understory	**CPD12 Balsam poplar/Northern reed grass**
15	Kentucky bluegrass dominates the understory	**CPD8 Balsam poplar-Aspen/Snowberry/Kentucky bluegrass**
	Smooth brome dominated understory	**CPD7 Balsam poplar-Aspen/Smooth brome**

Community Key to Deciduous

16	Balsam poplar co-dominates the overstory with red osier dogwood, and willow found in the understory	**10**
	Aspen or Paper birch dominated community types	**11**
17	Grazed Aspen, snowberry dominated site with smooth brome and Kentucky bluegrass in the understory	**CPD4 Aspen/Snowberry/Smooth brome-Kentucky bluegrass**
	Aspen and snowberry community disturbed by fire	**CPD18 Snowberry/Aspen**
18	Snowberry, chokecherry, saskatoon, aspen site which has been lightly impacted by grazing	**CPD17 Choke cherry-Snowberry-Saskatoon/Aspen**
	Snowberry, chokecherry, saskatoon, aspen site which has been heavily impacted by grazing	**CPD16 Snowberry-Choke cherry/Smooth brome/Aspen**
19	Grazed sites dominated by Kentucky bluegrass in the understory	**CPD2 Aspen/Juniper/Kentucky bluegrass-Sedge**
	A fire disturbed plant community with wormwood, sandgrass and aspen	**CPD15 Plains wormwood/Sandgrass/Aspen**
20	Grazed sites with Kentucky bluegrass and Smooth brome in the understory	**15**
21	Ungrazed sites with red osier dogwood and snowberry dominating the understory	**CPD6 Aspen-Balsam poplar/Saskatoon-Red osier dogwood-Snowberry**
	Ungrazed sites with snowberry and rose dominating	**CPD21 Balsam poplar-Aspen/Snowberry-Rose**

Community Key to Native Grass

1	Dry sandy sites dominated by sandgrass, Needle and thread, upland sedge, Western porcupine grass or sedge	**2**
	Moister sites dominated by rough fescue, Western wheat grass, wetland sedges, reedgrasses or saline tolerant plants	**3**
2	Very dry sandy sites with sand dropseed, sandgrass, or sedge dominating the community	**4**
	Moister sites dominated by Needle and thread, Western porcupine grass or Junegrass	**5**
3	Clay sites dominated by Western wheat grass, sedge or Kentucky bluegrass	**8**
	Sites dominated by rough fescue, wetland grass species or salt tolerant species	**9**
4	Open xeric sand dunes dominated by Sandgrass and Sand dropseed	**CPA9 Sand dropseed-Sand grass**
	Submesic site dominated by sedge and sandgrass	**CPA7 Sand grass-Needle and thread-June grass**
5	Needle and thread or sheep fescue and needle and thread dominated community type	**6**
	Slightly moister sites dominated by Western porcupine grass, Junegrass and sedge	**7**
6	Sheep fescue, needle and thread and june grass plant community	**CPA33 Sheep fescue-Needle and thread-June grass**
	Needle and thread dominated community type	**CPA11 Needle and thread/Fringed sage-Little club moss**
7	Grazed site dominated by sedge and Junegrass	**CPA8 Upland sedge-June grass**
	Western porcupine grass dominated sites	**39**
8	Moderate to heavily grazed western wheatgrass and sedge dominated community	**CPA4 Upland sedge-Western wheat grass-Plains rough fescue**
	A very clayey site dominated by western wheat grass and alkali bluegrass	**CPA1 Western wheat grass-Bluegrass**

Community Key to Native Grass

9	Mesic Loamy and Solonetzic rough fescue dominated grasslands (includes grazed rough fescue grasslands dominated by Kentucky bluegrass)	**10**
	Wetland sites dominated by sedge, reedgrasses, and saline tolerant species	**11**
10	Rough fescue dominated community on solonetzic soils	**CPA2 Plains rough fescue-Western wheat grass**
	Loamy grazed and ungrazed rough fescue dominated sites	**12**
11	Subirrigated sites dominated by sedge, tall manna, tufted hairgrass, reedgrasses, baltic rush, reed canary grass, cattails or bulrushes	**13**
	Saline and non-saline subirrigated sites dominated by saltgrass, silverweed, Three square rush, foxtail barley, Widgeongrass, Samphire or Nutall's saltgrass	**14**
12	Rough fescue dominated sites in SCA 4 and SCA 7	**36**
	Rough fescue dominated sites in SCA 9 and SCA10	**37**
13	Wetland marshes dominated by cattails or bulrushes	**15**
	Meadows dominated by sedges, reedgrasses, tall mana, tufted hairgrass, foxtail barley, garrison's meadow foxtail or baltic rush	**16**
14	Disturbed sites dominated by foxtail barley or timothy	**24**
	Saline sites dominated by Nutall's salt grass, salt grass, silverweed, marsh ragwort, Widgeon grass, Three square rush or Samphire	**25**
15	Cattail dominated marsh	**CPA17 Cattails**
	Bulrush dominated marsh	**CPA16 Great bulrush**
16	Reedgrass dominated meadows	**17**
	Sedge, spangletop, tall manna, tufted harigrass, foxtail or baltic rush dominated meadows	**18**
17	Marsh reedgrass dominated meadow	**19**
	Narrow reedgrass or reed canary grass dominated meadow	**20**
18	Sedge, tall manna, tufted hairgrass, foxtail or baltic rush dominated community type	**22**
19	Undisturbed marsh reedgrass plant community	**CPA10 Reed grass-Sedge**
	Disturbed marsh reedgrass plant community	**33**
20	Reed canary grass dominated sites	**21**
21	Reed canary grass dominated plant community	**CPA21 Reed canary grass**
	Reed canary grass, awned sedge plant community	**Cond10 Reed canary grass-Awned sedge-Narrow reed grass**
22	Tall manna grass dominated plant community	**CPA22 Tall manna grass**
	Baltic rush or sedge dominated plant community	**34**
23	Tufted hairgrass dominated plant community	**CPA23 Fowl bluegrass-Tufted hair grass**
	Sedge dominated community type	**35**
24	Site dominated by foxtail barley	**CPA19 Foxtail barley**

Community Key to Native Grass

24	Old lake bed sites or wetlands of receding water levels	**42**
25	Saltgrass dominated site	**27**
	Three square rush, marsh ragwort, Nutall's saltgrass or Samphire dominated site	**28**
26	Canada thistle present with creeping garrison foxtail	**CPA28 Garrison creeping foxtail/Canada thistle**
	Creeping garrison foxtail is present in a monoculture	**CPA18 Garrison creeping foxtail**
27	Baltic rush and saltgrass dominated site	**CPA40 Baltic rush-Salt grass**
	Saltgrass dominated site	**29**
28	Three square rush dominated site	**CPA13 Three square rush**
	Marsh ragwort, Samphire, or Nuttall's saltgrass dominated site	**30**
29	Undistrubed saltgrass plant community	**CPA43 Salt grass-Foxtail barley**
	Disturbed saltgrass plant community	**CPA20 Kentucky bluegrass-Salt grass**
30	Nuttall's saltgrass dominated site with foxtail barley	**31**
	Marsh ragwort or Samphire dominated site	**32**
31	Site is wetter, plant community band close to water	**40**
	Site is drier, plant community band is a transition to upland grassland communities	**41**
32	Marsh ragwort dominated site	**CPA24 Marsh ragwort**
	Samphire dominated site	**Cond14 Samphire salt flats**
34	Baltic rush dominated community type	**CPA12 Baltic rush**
	Sedge or tufted hairgrass dominated community type	**23**
35	Beaked sedge dominated community	**CPA15 Beaked sedge-Awned sedge**
	Awned sedge dominated community	**CPA14 Awned sedge**
36	Communities dominated by plains rough fescue	**44**
	Communities dominated by western porcupine grass	**48**
37	Light to moderately grazed rough fescue dominated grassland	**CPA25 Plains rough fescue**
	Moderate to heavily grazed rough fescue plant community	**38**
38	Kentucky bluegrass dominated and slender wheat grass co- dominant	**CPA27 Kentucky bluegrass-Slender wheat grass**
	Rough fescue, kentucky bluegrass co-dominate	**CPA26 Plains rough fescue - Kentucky bluegrass**
39	Light to moderate grazed site dominated by Western porcupine grass and sedge	**CPA6 Upland sedge-Western porcupine grass**
	Western porcupine sites that are drier to past grazing regimes	**47**

Community Key to Native Grass

40	Salt grass and foxtail barley codominant	**CPA42 Salt grass-Foxtail barley-Nuttall salt-meadow grass**
	Foxtail dominated	**CPA41 Foxtail barley-Nuttall salt-meadow grass**
41	Alkali cord grass dominant	**CPA45 Alkali cordgrass-Baltic rush**
	Awned wheatgrass dominant	**CPA44 Slender wheat grass-Salt grass**
42	Site dominated by Creeping Garrision Foxtail	**26**
	Upland from old lake beds or alkali influenced areas dominated with Kentucky bluegrass	**43**
43	Site dominated by clover and dandelion	**CPA30 Kentucky bluegrass-Baltic rush/Clover-Dandelion**
	Site dominated by perennial sow thistle	**CPA29 Kentucky bluegrass-Baltic rush/Perennial sow-thistle**
44	Grazed site dominated by sedge and Junegrass	**CPA8 Upland sedge-June grass**
	Light to moderately grazed rough fescue dominated grassland	**CPA3 Plains rough fescue-Western porcupine grass**
45	Plains rough fescue still present	**CPA50 Western Porcupine-Plains Rough Fescue-Kentucky bluegrass**
	Little to no plains rough fescue present	**46**
46	Modified community with Kentucky bluegrass dominanting due to long term disturbance	**CPA52 Slender wheat grass-Kentucky bluegrass**
	Kentucky bluegrass dominant but western porcupine still present	**CPA51 Kentucky bluegrass-Western porcupine grass**
47	Western porcupine, blue grama dominated plant community	**CPA34 Blue grama-Western porcupine grass/Pasture sagewort**
	Western porcupine, sedge and Kentuky bluegrass dominated community	**CPA34 Blue grama-Western porcupine grass/Pasture sagewort**
48	Western porcupine dominated with plains rough fescue	**CPA49 Western Porcupine Grass-Plains Rough Fescue**
	Increased grazing pressure causing a shift to Kentucky bluegrass	**45**

Community Key to Conifer

1	Mesic or moist sites with White spruce	**2**
2	Mesic site with understory dominated by moss	**CPE2 White spruce/Moss**
	Moister or richer sites dominated by red osier dogwood or horsetail	**3**
3	Very wet sites with horsetail in the understory	**CPE3 White spruce/Horsetail**
	Moist site dominated by red osier dogwood	**CPE1 White spruce/Balsam poplar/Red osier dogwood-Rose**

Community Key to Shrubland

1	Sandy sites with variable moisture regimes in the Choppy sandhills near Wainwright dominated by juniper, Bebbs willow or Water birch	**2**
	Mesic to subhygric sites dominated by silverberry, snowberry, red osier dogwood, chokecherry, silver sagebrush or willows	**3**

Community Key to Shrubland

2	Juniper dominated community types	**4**
	Bebbs willow or Water birch dominated sites	**5**
3	Mesic to subhygric sites dominated by silverberry, snowberry, chokecherry, silver sage or saskatoon	**7**
	Subhygric to subhydric sites dominated by willows and red osier dogwood	**8**
4	Slightly moister sites co-dominated by rough fescue	**CPC16 Juniper/Plains rough fescue**
	Very dry sites co-dominated by sandgrass, sedge, bearberry, or Needle and thread grass	**6**
5	Bebbs willow dominated site	**CPC3 Bebb willow-Rose/Slender wheat grass**
	Water birch dominated site	**CPC2 Water birch-Juniper**
6	Sedge, sandgrass and Needle and thread grass co-dominate the site	**CPC19 Juniper/Little club-moss/Needle and thread**
	Bearberry and Sandgrass co-dominate the site	**CPC18 Juniper-Bearberry/Sand grass**
7	Drier sites (sandy) dominated by silverberry, snowberry, chokecherry or saskatoon	**9**
	Moister sites (loamy) dominated by snowberry, silverberry or silver sagebrush	**10**
8	Subhygric rich sites dominated by red osier dogwood, yellow willow, water birch and sandbar willow	**13**
	Subhydric sites dominated by basket willow or willow and bog birch	**14**
9	Lightly grazed silverberry, chokecherry, hay sedge dominated community	**CPC1 Silverberry-Prickly Rose/June grass-Sandgrass**
	Community influenced by grazing or other disturbances	**24**
10	Silver sagebrush dominated community type	**CPC4 Silver sagebrush/Western wheat grass**
	Moist to very wet sites dominated by snowberry or silverberry	**11**
11	Very wet site dominated by silverberry and narrow reedgrass	**CPC12 Silverberry/Narrow reed grass**
	Sites dominated by snowberry, silverberry, rough fescue and Kentucky bluegrass	**12**
12	Snowberry, Silverberry dominated communities found in SCA 4 and 7	**19**
	Snowberry, Silverberry dominated sites found in SCA 9 and 10	**20**
13	Sandbar willow dominated site	**CPC11 Sandbar willow**
	Yellow willow, water birch and red osier dogwood dominated sites	**15**
14	Drier basket willow sites with rose and snowberry	**CPC15 Basket willow/Rose-Snowberry/Sedge**
	Wetter sites with marsh reedgrass, sedge or Kentucky bluegrass dominating the understory	**17**
15	Water birch and red osier dogwood dominated site	**CPC8 Water birch-Red osier dogwood**
	Yellow willow dominated site (grazed and ungrazed)	**16**
16	Lightly grazed yellow willow community type with red osier dogwood	**CPC9 Yellow willow-Red osier dogwood**

Community Key to Shrubland

16	Moderate to heavily grazed yellow willow community type with Kentucky bluegrass	**CPC10 Yellow willow/Kentucky bluegrass**
17	Moderately to heavily grazed basket willow dominated type with Kentucky bluegrass or Smooth brome in the understory	**CPC14 Basket willow/Kentucky bluegrass**
	Lightly grazed Basket willow or willow and bog birch dominated type	**18**
18	Willow, bog birch and sedge dominated site	**CPC20 Willow-Bog birch/Sedge**
	Site dominated by basket willow and marsh reed grass	**CPC13 Basket willow/Reed grass**
19	Grazed sites with Kentucky bluegrass	**CPC6 Snowberry-Silverberry/Kentucky bluegrass**
	Ungrazed sites with rough fescue and Western porcupine grass	**CPC5 Snowberry-Silverberry/Rough fescue-Western porcupine grass**
20	Moist sites dominated silverberry and rough fescue	**CPC31 Silverberry/Plains rough fescue-Prairie sedge**
	Sites dominated by snowberry and rough fescue	**21**
21	Lightly to moderately grazed sites dominated by snowberry and rough fescue	**CPC29 Snowberry/Plains rough fescue**
	Moderate to heavily grazed sites dominated by snowberry, rough fescue and kentucky bluegrass	**22**
22	Moderately grazed snowberry plant communities where rough fescue and kentucky bluegrass are co-dominate	**CPC30 Snowberry/Plains rough fescue-Kentucky bluegrass**
	Heavy past use resulting in snowberry and non-native species to invade	**23**
23	Heavily grazed snowberry and kentucky bluegrass dominated site	**CPC32 Snowberry/Kentucky bluegrass**
	Increased moisture has allowed for smooth brome to become established	**CPC23 Snowberry/Smooth brome**
24	A chokecherry, saskatoon community domianted by smooth brome in the understory	**CPC7 Choke cherry-Saskatoon/Smooth brome**
	A heavier grazed community with Kentucky bluegrass dominating the understory	**CPC22 Rose-Silverberry/Kentucky bluegrass**

Table 6. Range Plant Communities in the Central Parkland Natural Subregion

Ecological Site	Ecosite Phase	Reference Range Plant Community	Successional Community Types	Modified Community Types (burning, cultivation, etc.)
a Sand dropseed (xeric/ poor)	a1 grassland	CPA9 Sand dropseed-Sand grass		
b Sandgrass/ Juniper (subxeric/ poor)	b1 grassland	CPA47 Plains rough fescue-Sand grass	CPA7 Sand grass-Needle and Thread- June grass	
			CPA48 Blue grama-Sand grass-Needle and Thread	
			CPA33 Sheep fescue-Needle and thread-June grass	
	b2 shrubland	CPC16 Juniper/Plains rough fescue		
		CPC17 Juniper/Sand grass-Sedge		
		CPC18 Juniper-Bearberry/Sand grass		
		CPC2 Water birch-Juniper		
		CPC3 Bebb willow-Rose/Slender wheat grass		
c Needle and thread (subxeric/ medium)	c1 grassland	CPA11 Needle and Thread/Fringed sage-Little club moss		
	c2 shrubland	CPC19 Juniper/Little club moss/Needle and Thread		
		CPC24 Narrow leaved meadowsweet-Aspen		
	c3 deciduous	CPD1 Aspen/Juniper/Sedge	CPD2 Aspen/Juniper/Kentucky bluegrass-Sedge	CPD15 Plains wormwood/Sand grass/Aspen
		CPD20 Aspen/Bearberry/ Purple Oatgrass-Sedge		
d Western porcupine grass (submesic/ medium)	d1 grassland	CPA49 Western porcupine grass Plains rough fescue	CPA50 Western porcupine grass-Plains rough fescue-Kentucky bluegrass	
			CPA51 Kentucky bluegrass-Western porcupine grass	CPA52 Slender wheat grass-Kentucky bluegrass
		CPA6 Upland sedge-Western porcupine grass	CPA8 Upland sedge-June grass	
		CPA34 Blue grama-Western Porcupine grass/Pasture sagewort	CPA32 Kentucky bluegrass-Sedge-Western porcupine grass	
	d2 shrubland	CPC1Silverberry/ Prickly rose/June grass- Sand grass	CPC22 Rose-Silverberry/Kentucky bluegrass	CPC7 Choke cherry-Saskatoon/Smooth brome
		CPC21 Snowberry-Silverberry/Needle and Thread-Kentucky bluegrass		
	d3 deciduous	CPD3 Aspen/Snowberry-Choke cherry-Saskatoon		CPD17 Choke cherry-Snowberry-Saskatoon/Aspen
				CPD16 Snowberry-Choke cherry/Smooth brome/Aspen
	d6 tame	CPB5 Crested wheat grass		
e Saline blowout (mesic/ poor)	e1 grassland	CPA2 Plains rough fescue-Western wheat grass		

Ecological Site	Ecosite Phase	Reference Range Plant Community	Successional Community Types	Modified Community Types (burning, cultivation, etc.)
f Western wheat grass (mesic/ medium)	f1 grassland	CPA1 Western wheat grass-Bluegrass		
g Plains rough fescue/ Snowberry (mesic/ rich)	g1 grassland	CPA25 Plains rough fescue	CPA26 Plains rough fescue-Kentucky bluegrass	CPA46 Kentucky bluegrass-Smooth brome
			CPA27 Kentucky bluegrass-Slender wheat grass	
		CPA3 Plains rough fescue-Western porcupine grass	CPA4 Upland sedge-Western wheat grass-Plains rough fescue	
			CPA5 Upland sedge-Kentucky bluegrass	
	g2 shrubland	CPC29 Snowberry/Plains rough fescue	CPC30 Snowberry/Plains rough fescue-Kentucky bluegrass	
			CPC32 Snowberry/Kentucky bluegrass	
			CPC23 Snowberry/ Smooth brome	
		CPC5 Snowberry-Silverberry/ Plains rough fescue-Western porcupine grass	CPC21 Snowberry-Silverberry/Needle and Thread-Kentucky bluegrass	
			CPC6 Snowberry-Silverberry/Kentucky bluegrass	
		CPC31Silverberry/ Plains rough fescue-Prairie sedge		
	g3 deciduous	CPD13 Aspen/Snowberry-Rose	CPD4 Aspen/Snowberry/ Smooth brome-Kentucky bluegrass	CPD18 Snowberry/Aspen
		CPD28 Aspen/Snowberry/ Awned wheat grass		
		CPD14 Aspen/Beaked hazelnut		
	g4 conifer	CPE2 White spruce/Moss		
	g5 industrial	CPI2 Creeping red fescue-Kentucky bluegrass		
		CPI3 Kentucky bluegrass-Northern wheat grass/ Dandelion		
		CPI4 Slender wheat grass-Kentucky bluegrass		
		CPI6 Timothy-Smooth brome	CPI5 Smooth brome-Kentucky bluegrass/Dandelion	
	g6 tame	CPB1 Alfalfa/Brome-Kentucky bluegrass	CPB2 Kentucky bluegrass-Smooth brome	
			CPB3 Snowberry/Kentucky bluegrass-Smooth brome	
		CPB4 Meadow brome		
h Silver sagebrush (subhygric/ medium)	h2 shrubland	CPC4 Silver sagebrush/Western wheat grass		
i Red osier dogwood (subhygric/rich)	i2 shrubland	CPC9 Yellow willow-Red osier dogwood	CPC10 Yellow willow/Kentucky bluegrass	
		CPC11Sandbar willow		
		CPC12 Silverberry/Narrow reed grass		

Ecological Site	Ecosite Phase	Reference Range Plant Community	Successional Community Types	Modified Community Types (burning, cultivation, etc.)
		CPC8 Water birch-Red osier dogwood		
	i3 deciduous	CPD6 Aspen-Balsam poplar/ Saskatoon-Red osier dogwood-Snowberry	CPD21 Balsam poplar-Aspen/Snowberry-Rose	
			CPD8 Balsam poplar-Aspen/Snowberry/ Kentucky bluegrass	
		CPD11Balsam poplar-Aspen/Willow	CPD7 Balsam poplar-Aspen/Smooth brome	
		CPD9 Balsam poplar/Hazelnut-Red osier dogwood		
		CPD5 Paper birch/Canada buffaloberry		
		CPD12 Balsam poplar/Northern reed grass		
	i4 conifer	CPE1 White spruce/Balsam poplar/Red osier dogwood-Rose		
j Foxtail barley (subhygric/ medium to poor)	j1 grassland	CPA18 Garrison creeping foxtail	CPA28 Garrison creeping foxtail/Canada thistle	
		CPA30 Kentucky bluegrass-Baltic rush/Clover-Dandelion	CPA29 Kentucky bluegrass-Baltic rush/ Perennial sow- thistle	
		CPA19 Foxtail barley		
		CPA24 Marsh ragwort		
k Horsetail (hygric/rich)	k3 deciduous	CPD10 Balsam poplar-Aspen/ Red osier dogwood/Horsetail		
	k4 conifer	CPE3 White spruce/Horsetail		
l Saline Lowlands (hygric/ poor)	l1 grassland	CPA40 Baltic rush-Salt grass	CPA41 Foxtail barley-Nuttall's salt-meadow grass	
			CPA42 Salt grass-Foxtail barley-Nuttall's salt- meadow grass	
			CPA43 Salt grass-Foxtail barley	
			CPA44 Awned wheat grass-Salt grass	
			CPA45 Alkali cordgrass-Baltic rush	
			CPA20 Kentucky bluegrass-Salt grass	
		CPA13 Three square rush		
		COND14 Samphire salt flats		
m Fen (subhydric/ rich)	m1 graminoid fen	CPA10 Reed grass-Sedge		
		CPA12 Baltic rush		
		CPA14 Awned sedge		
		CPA15 Beaked sedge-Awned sedge		
		CPA21 Reed canary grass		
		CPA22 Tall manna grass		
		CPA23 Fowl bluegrass-Tufted hair grass		
		COND10 Reed canary grass-Awned sedge-Narrow reed grass		
	m2 shrubby fen	CPC13 Basket willow/Reed grass	CPC14 Basket willow/Kentucky bluegrass	

Ecological Site	Ecosite Phase	Reference Range Plant Community	Successional Community Types	Modified Community Types (burning, cultivation, etc.)
		CPC15 Basket willow-Rose-Snowberry/Sedge		
		CPC20 Willow- Bog birch/Sedge		
n Marsh (hydric/ rich)	n1 marsh	CPA16 Great bulrush		
		CPA17 Cattails		

8.0 General Ecological Site Description

Central Parkland Grassland Ecology (A, B, I)

The Central Parkland Natural Subregion has variable ecological conditions. Much of the variation is the result of topography, soils, and climate. Fire is an important factor in determining the composition of grasslands because of the high flammability of the vegetation during the dry periods. A lack of fire and an increase in annual precipitation favours the growth of deciduous trees and shrubs onto the more mesic sites.

There are multiple grassland communities described for the Central Parkland (56 types), and the variability is due to ecological conditions such as soil type, nutrient and moisture influences. Mesic grasslands in the western regions (Rumsey) on loamy soils are dominated by plains rough fescue, western wheat grass, western porcupine grass and sedges, however in eastern areas on drier, sandier soils (Wainwright area) species shifts occur in which increases in sand grass, needle and thread grass, sand dropseed grass and upland sedge are observed. Grasslands associated with hygric conditions such as wetlands, fens, marshes and saline lowland sites occur throughout the Central Parkland Natural Subregion. Continued heavy grazing pressure has created species shifts for some of these communities, for example in the Loamy mesic/rich grasslands at Rumsey. Here as grazing disturbance increases, species shifts from Plains rough fescue/Western porcupine grass to increases in Kentucky bluegrass are observed.

Central Parkland Shrubland Ecology (C)

Similar to the Central Parkland grassland communities, shrubland communities are influenced by ecological conditions such as moisture and nutrient regimes. Sandy sites with variable moisture regimes in the choppy sandhills near Wainwright are dominated by juniper, Bebb willow, or water birch. Mesic to very wet sites are dominated by silverberry, snowberry, red osier dogwood, chokecherry, silver sagebrush or willows. Within the choppy sandhills ecological sites, shrubland communities are separated by presence of juniper (subxeric site) or water birch/ Bebb willow (mesic sites). Shrubland communities observed on sandy soils (submesic/medium) are dominated by silver sagebrush and choke cherry. Shrublands observed on loamy soils are dominated with snowberry and silverberry. Silver sagebrush communities are also observed on overflow sites in the Central Parkland Natural subregion. Subirrigated shrubland communities are dominated with willows, water birch and red osier dogwood. The general rule of thumb is that areas that are covered with 20- 30% of shrubs are classified as shrublands (depending on area).

Central Parkland Deciduous Ecology (D)

Deciduous communities, primarily aspen, occur throughout the Central Parkland Natural Subregion. Dry sandy areas around Wainwright have aspen and juniper dominating the understory. Mesic or subhygric aspen dominated sites are associated or co-dominated by balsam poplar and paper birch with snowberry, chokecherry, willow, red osier dogwood, hazelnut or horsetail in the understory. Deciduous communities on sandy (submesic/medium) sites are

dominated with aspen in the overstory and snowberry, choke cherry, and saskatoon in the understory. These communities are typical for the Wainwright dunes ecological reserve where there is higher soil moisture, variations of this community occur in this area where repeated fire and grazing has occurred which lowers the cover of aspen and dries out the site. The most successionaly advanced plant community on loamy mesic sites is the aspen/snowberry community. These plant communities occur on easterly and northerly aspects on lower slope positions where moisture is favourable for growth of aspen. Subirrigated (subhygric) deciduous communities are observed along edges of freshwater lakes and sloughs, river banks and toeslopes. Hygric deciduous communities are observed where flooding or seepage occurs or where there is a high water table, these communities are associated with horsetail.

Most of the deciduous communities are capable of supporting livestock grazing, however where extensive heavy grazing pressure has occurred, the cover of the understory layers decrease and allows Kentucky bluegrass and brome species to become established and increase. Smooth brome can invade in aspen and in areas of draws due to greater moisture capture and rhizomatous properties.

9.1 Sand dropseed (xeric/ poor- a)

General Description:
The sands ecological site applies to all non-saline and non-gleyed Chernozemic and Regosolic soils with soil textures in the very coarse (loamy sand and sand) textural subgroup. This ecological site is often associated with level to rolling topography, and is associated with duned landscapes. This site is often associated with open exposed sand and sparse vegetation dominated by sand dropseed, indian rice grass and creeping juniper.

Successional Relationships:
The dry nature of the site often limits tree and shrub growth onto these sites and they will often remain grass covered.

Indicator species: Sand grass, Creeping juniper, Hay sedge and Sand dropseed

Site Characteristics:

Moisture Regime: Xeric
Nutrient Regime: Oligotrophic, Submesotrophic
Topographic Position: Level, Crest
Slope: 3- 30%
Aspect: Variable

Soil Characteristics:

Organic Thickness: 0-5 cm,
Surface Texture: LFS, LVFS, S
Depth to Mottles: None
Soil Drainage: Very rapidly drained
Soil Subgroup: O.R, O.HR

9.1.1 Sand dropseed (xeric/ poor): Grassland

Plant Community Types:
CPA9: Sand dropseed- Sand grass

CPA9. Sand dropseed-Sand grass

(Sporobolus cryptandrus-Calamovilfa longifolia)

n=5 This plant community is described from four plots collected for the Wainwright Sand Dunes Ecological Classfication and on Canadian Forces Base Wainwright. It can occur on sand dunes and active blowouts generally located on south to west-facing aspects with Regosolic soils and sparse vegetative cover (Wheatley and Bentz 2002).

Natural Subregion: CENTRAL PARKLAND

Ecosite: a Sand dropseed (xeric/poor)

Ecosite Phase: a1 grassland

Plant Composition	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
CREEPING JUNIPER *(Juniperus horizontalis)*	2	0-7	40
Forb			
COMMON ANNUAL SUNFLOWER *(Helianthus annuus)*	1	0-5	40
GOLDEN ASTER *(Heterotheca villosa)*	1	0-1	80
Grass			
HAY SEDGE *(Carex siccata)*	14	5-30	100
JUNE GRASS *(Koeleria macrantha)*	1	0-2	60
NEEDLE-AND-THREAD *(Stipa comata)*	2	0-5	80
SAND DROPSEED *(Sporobolus cryptandrus)*	16	4-30	100
SAND GRASS *(Calamovilfa longifolia)*	19	4-30	100
Lichen			
REINDEER LICHEN *(Cladina mitis)*	1	0-3	40

Environmental Variables

Moisture Regime: XERIC()

Nutrient Regime: OLIGOTROPHIC(), SUBMESOTROPHIC()

Elevation (range): 689(-) M

Slope: 16 - 30()

Aspect: Southerly(), Westerly()

Soil Drainage: Rapidly drained()

Soil Subgroup: O.R, O.HR

Soil Series: WWT

Soil Correlation: SCA 4

Range Site Category: Sa, CS

Ecological Status Score: 40

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	150	50	300
Grass	800	360	1200
Shrub			
Tree			
Undifferentiated	336		
Total	1286.27	410	1500

Ecologically Sustainable Stocking Rate

2.70 (8.10-2.02) HA/AUM or *0.15 (0.05-0.20) AUM/AC*

9.2 Sand grass/ Juniper (subxeric/ poor- b)

General Description:
This ecological site has variable moisture conditions with poor to medium nutrient status due to the coarse textured eolian, glaciofluvial or fluvial eolian parent materials. This ecological site is characteristic of the sandy dune areas around Wainwright, Alberta. This ecological site is found in areas with a level or nearly level, or southerly aspect. It is usually found where the water table is greater than 2 m from the surface. On steep south facing slopes nearly bare sand will dominate this ecological site and the plant community will be represented by a creeping juniper dominated grassland. On northerly aspects where moisture levels are more favourable aspen will invade onto the grassland and in moist depressions water birch and Bebb's willow will often dominate the plant community.

Successional Relationships:
Due to the dry nature of the site often only juniper and sedge will dominate the site. Aspen will invade in the more moist areas or on northerly aspects to form an aspen shrubland. Carrying capacity on these sites is quite variable. On very sandy sites juniper will tend to dominate and carrying capacity will be quite low. In contrast on more moist sites grass cover is more predominant and can be extensively utilized by livestock.

Indicator species: Sand grass, Plains rough fescue, Sedge species, Water birch

Site Characteristics:

Moisture Regime: Subxeric, Submesic, Mesic
Nutrient Regime: Submesotrophic, Mesotrophic
Topographic Position: Level, Crest, Midslope
Slope: 0- 70%
Aspect: Variable

Soil Characteristics:

Organic Thickness: 0-5 cm,
Surface Texture: L, LS, SL, S
Depth to Mottles: None
Soil Drainage: Very rapidly drained, Rapidly drained, Well drained
Soil Subgroup: O.R, O.DB, O.BL

9.2.1 Sand grass/ Juniper (subxeric/ poor): Grassland

Characteristic Species:

Shrub: Creeping juniper

Grass: Sand grass, Sand dropseed, Hay sedge

Plant Community Types:

CPA47: Plains rough fescue- Sand grass (29)
CPA7: Sand grass- Needle and thread- June grass (60)
CPA48: Blue grama- Sand grass- Needle and thread (20)
CPA33: Sheep fescue- Needle and thread- June grass (26)

CPA47. Plains rough fescue-Sand grass

(Festuca halli- Calamovilfa longifolia)

n=29 This community is the reference community in sand dunes (generally situated in the area between the dunes). Typically found on the level to undulating portion within the sandhill complex. This community is productive averaging 1000 lbs/ac., however litter production is highly variable due to the sand dune complex. Areas in which soils are more productive, aspen regeneration or silverberry tend to encroach on the grassland. With increasing grazing pressures blue grama and needle and thread will become more dominant creating the successional community CPA7: Sand grass- Needle and thread or CPA48: Blue grama- Sand grass- Needle and Thread. The soil texture for this community is classified as C2 which is: very coarse (S, LS), sediments deposited by wind or water. Most of the sites are Orthic Black Chernozems (SCA7), as represented the soil series of Garry (GAR) and/or Red Willow (RED). A few sites are Orthic Dark Brown Chernozems (SCA4), as represented by the Wainwright (WTT) soil series. This plant community occurs within the grazed portion of Setting Sun Range Reference Area.

Natural Subregion: CENTRAL PARKLAND

Ecosite: b Sandgrass/Juniper (subxeric/poor)

Ecosite Phase: b1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
SILVERBERRY *(Elaeagnus commutata)*	1	0-8	34
UNDIFFERENTIATED ROSE *(Rosa)*	3	0-8	86
Forb			
GOLDEN ASTER *(Heterotheca villosa)*	1	0-9	59
GOLDEN BEAN *(Thermopsis rhombifolia)*	2	0-15	66
LOW GOLDENROD *(Solidago missouriensis)*	2	0-15	48
PASTURE SAGEWORT *(Artemisia frigida)*	5	0-12	90
PLAINS WORMWOOD *(Artemisia campestris)*	1	0-4	38
UNDIFFERENTIATED EVERLASTINGS *(Antennaria)*	1	0-6	41
Grass			
BLUE GRAMA *(Bouteloua gracilis)*	1	0-4	41
HOOKER'S OAT GRASS *(Helictotrichon hookeri)*	1	0-2	52
JUNE GRASS *(Koeleria macrantha)*	2	0-4	97
NEEDLE-AND-THREAD *(Stipa comata)*	1	0-11	41
PLAINS ROUGH FESCUE *(Festuca hallii)*	10	1-36	100
ROCKY MOUNTAIN FESCUE *(Festuca saximontana)*	2	0-6	66
SAND GRASS *(Calamovilfa longifolia)*	6	2-13	100
UNDIFFERENTIATED SEDGE *(Carex)*	5	1-16	100
WESTERN PORCUPINE GRASS *(Stipa curtiseta)*	5	0-13	83

Environmental Variables

Moisture Regime: SUBXERIC()

Nutrient Regime: SUBMESOTROPHIC()

Elevation (range): 670(650-678) M

Slope: 3 - 5(), 6 - 9(), 10 - 15(), 16 - 30(), 31 - 45(), 46 - 70()

Aspect: Easterly(), Southerly(), Variable()

Soil Drainage: Very rapidly drained(), Rapidly drained()

Soil Subgroup: O.DB, O.BL

Soil Series: RED, WWT, GAR

Soil Correlation: SCA 4, SCA 7

Range Site Category: Sa, Sy, CS

Ecological Status Score: 40

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	1210	560	1681
Total	1209.63	560.45	1681.35

Ecologically Sustainable Stocking Rate

1.44 (2.70-1.26) HA/AUM or *0.28 (0.15-0.32) AUM/AC*

CPA7. Sand grass-Needle and thread-June grass

(Calamovilfa longifolia-Stipa curtiseta-Koeleria macrantha)

n=60 This plant community is a late seral community and is a component in a mosaic with shrub and tree communities. Over the landscape this grassland will frequently make up 20 - 70% of the mosaic. It is found primarily on loamy sand soils in the Wainwright - Metiskow area. This type can also be present on sandy loam or sand soils. On drier sites needle and thread will replace western porcupine grass in the plant community. This type is frequently associated with level or undulating sites interspersed in the choppy sandhill land systems.

Natural Subregion: CENTRAL PARKLAND

Ecosite: b Sandgrass/Juniper (subxeric/poor)

Ecosite Phase: b1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
ASPEN *(Populus tremuloides)*	1	0-15	33
CHOKE CHERRY *(Prunus virginiana)*	1	0-10	43
CREEPING JUNIPER *(Juniperus horizontalis)*	1	0-10	37
SILVERBERRY *(Elaeagnus commutata)*	1	0-8	33
UNDIFFERENTIATED ROSE *(Rosa)*	3	0-13	85
Forb			
GOLDEN BEAN *(Thermopsis rhombifolia)*	1	0-5	33
LOW GOLDENROD *(Solidago missouriensis)*	1	0-11	37
PASTURE SAGEWORT *(Artemisia frigida)*	4	0-16	88
PLAINS WORMWOOD *(Artemisia campestris)*	1	0-11	37
Grass			
BLUE GRAMA *(Bouteloua gracilis)*	2	0-11	58
JUNE GRASS *(Koeleria macrantha)*	4	0-12	95
NEEDLE-AND-THREAD *(Stipa comata)*	5	0-23	97
PLAINS ROUGH FESCUE *(Festuca hallii)*	1	0-7	53
ROCKY MOUNTAIN FESCUE *(Festuca saximontana)*	1	0-5	62
SAND GRASS *(Calamovilfa longifolia)*	9	1-30	100
UNDIFFERENTIATED SEDGE *(Carex)*	11	2-48	100
WESTERN PORCUPINE GRASS *(Stipa curtiseta)*	4	0-19	72

Environmental Variables

Moisture Regime: SUBXERIC()

Nutrient Regime: SUBMESOTROPHIC()

Elevation (range): 680(625-711) M

Slope: 0.5 - 2.5(06), 3 - 5(72), 6 - 9(18)

Aspect:

Soil Drainage: Very rapidly drained(40), Rapidly drained(56)

Soil Subgroup: O.DB, O.BL, O.R

Soil Series: CNN, HCH, HND, MET, RED, WWT, ZUN

Soil Correlation: SCA 4, SCA 7

Range Site Category: Lo, Sa, Sy

Ecological Status Score: 27

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb	100	20	180
Grass	788	525	1050
Shrub	13		25
Tree			
Total	901	545	1255

Ecologically Sustainable Stocking Rate

1.62 (2.70-1.34) HA/AUM or *0.25 (0.15-0.30) AUM/AC*

Observed stocking rates that are characteristic for landscape mosaics which include sedge-sandgrass, shrub and tree communities are .15 - .3 AUM's/ac. The woody parts of these landscapes are secondary or tertiary range so the actual grazing pressure is estimated at .3 -.5 AUM's/ac. on the sedge-sandgrass component. This type is found on pastures with continuous grazing at light to moderate grazing rates.

CPA48. Blue Grama-Sand grass-Needle and Thread

(Bouteloua gracilis-Calamovilfa longifolia-Stipa comata)

n=20 This community is a successional community in which plains rough fescue has been decreased and grazing tolerant species like blue grama and needle and thread become more prominent. Forage and litter production is variable, due to location of the community on the landform is highly variable as it can be found on level uplands to steep slopes. However it is more prevalent on south facing slopes. When found on a level or slightly more mesic conditions this community will be the result of drying influences such as grazing or trampling and it is a successional step from CPA47 (Plains rough fescue- Sand grass) and CPA7 (Sand grass- Needle and thread- June grass). The underlying common influences for CPA47, CPA7 and CPA48, are the climate and the presence of sandy loam and loamy sand soils. The soil texture for this community is classified as C2 which is: very coarse (S, LS), sediments deposited by wind or water. Most of the sites are Orthic Black Chernozems (SCA7), as represented the soil series of Garry (GAR) and/or Red Willow (RED). A few sites are Orthic Dark Brown Chernozems (SCA4), as represented by the Wainwright (WTT) soil series.

Natural Subregion: CENTRAL PARKLAND

Ecosite: b Sandgrass/Juniper (subxeric/poor)

Ecosite Phase: b1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Forb			
FIELD MOUSE-EAR CHICKWEED *(Cerastium arvense)*	1	0-7	45
GOLDEN ASTER *(Heterotheca villosa)*	1	0-6	70
PASTURE SAGEWORT *(Artemisia frigida)*	9	1-27	100
Grass			
BLUE GRAMA *(Bouteloua gracilis)*	10	5-22	100
JUNE GRASS *(Koeleria macrantha)*	3	0-6	95
NEEDLE-AND-THREAD *(Stipa comata)*	4	0-13	65
ROCKY MOUNTAIN FESCUE *(Festuca saximontana)*	1	0-10	45
SAND GRASS *(Calamovilfa longifolia)*	4	0-9	80
UNDIFFERENTIATED SEDGE *(Carex)*	5	2-13	100
WESTERN PORCUPINE GRASS *(Stipa curtiseta)*	4	0-17	85

Environmental Variables

Moisture Regime: SUBXERIC()

Nutrient Regime: SUBMESOTROPHIC()

Elevation (range): 690(630-740) M

Slope: 0.5 - 2.5(), 3 - 5(), 6 - 9(), 10 - 15(), 16 - 30(), 46 - 70()

Aspect: Southerly()

Soil Drainage: Very rapidly drained(), Rapidly drained()

Soil Subgroup: O.DB, O.BL

Soil Series: RED, WWT, GAR

Soil Correlation: SCA 4, SCA 7

Range Site Category: Sa, Sy, CS

Ecological Status Score: 15

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	891	448	1121
Total	890.82	448.36	1120.9

Ecologically Sustainable Stocking Rate

1.61 (2.69-1.34) HA/AUM or *0.25 (0.15-0.30) AUM/AC*

CPA33. Sheep fescue-Needle and thread-June grass

(Festuca saximontana-Stipa comata-Koeleria macrantha)

n=26 This plant community is the primary grassland found on loamy sand sites throughout SCA 4. This is a grassland component within the parkland mosiac that is found in sand, sandy and choppy sandhills. These sites are frequently associated with activities including heavy grazing, burning or other disturbances that have further dried out the site.

Natural Subregion: CENTRAL PARKLAND

Ecosite: b Sandgrass/Juniper (subxeric/poor)

Ecosite Phase: b1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
CREEPING JUNIPER *(Juniperus horizontalis)*	2	0-13	31
UNDIFFERENTIATED ROSE *(Rosa)*	3	0-7	81
Forb			
FIELD MOUSE-EAR CHICKWEED *(Cerastium arvense)*	1	0-5	92
GOLDEN ASTER *(Heterotheca villosa)*	2	0-5	73
GOLDEN BEAN *(Thermopsis rhombifolia)*	1	0-12	35
LOW GOLDENROD *(Solidago missouriensis)*	2	0-8	81
PASTURE SAGEWORT *(Artemisia frigida)*	7	0-14	92
PLAINS WORMWOOD *(Artemisia campestris)*	1	0-6	31
PRAIRIE SAGEWORT *(Artemisia ludoviciana)*	1	0-14	42
SMALL-LEAVED EVERLASTING *(Antennaria parvifolia)*	1	0-3	50
THREE-FLOWERED AVENS *(Geum triflorum)*	1	0-12	31
Grass			
BLUE GRAMA *(Bouteloua gracilis)*	2	0-7	58
HOOKER'S OAT GRASS *(Helictotrichon hookeri)*	1	0-9	54
JUNE GRASS *(Koeleria macrantha)*	5	2-9	100
NEEDLE-AND-THREAD *(Stipa comata)*	5	0-14	89
PLAINS ROUGH FESCUE *(Festuca hallii)*	1	0-6	77
ROCKY MOUNTAIN FESCUE *(Festuca saximontana)*	8	1-20	100
SAND GRASS *(Calamovilfa longifolia)*	3	0-11	77
UNDIFFERENTIATED SEDGE *(Carex)*	6	2-16	100
WESTERN PORCUPINE GRASS *(Stipa curtiseta)*	2	0-12	62

Environmental Variables

Moisture Regime: SUBXERIC(100)

Nutrient Regime: SUBMESOTROPHIC(100)

Elevation (range): 656(607-704) M

Slope: 3 - 5(), 6 - 9(), 10 - 15(), 16 - 30()

Aspect: Variable()

Soil Drainage: Well drained()

Soil Subgroup: O.DB, O.BL, O.R

Soil Series: CNN, DCY, HCH, MET, RED, WWT

Soil Correlation: SCA 4, SCA 7

Range Site Category: Sa, Sy, CS

Ecological Status Score: 15

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

1.84 (4.05-1.35) HA/AUM or *0.22 (0.10-0.30) AUM/AC*

Successional pathway: CPA47→ CPA7→ CPA48→ CPA33

CPA47 Plains rough fescue- Sand grass

This is the reference plant community typically in sand dunes or areas with sand influence. This community can be highly productive however areas of higher moisture face shrub encroachment. Increasing grazing pressures result in needle and thread and blue grama to become dominant species.

CPA7: Sand grass- Needle and thread- June grass

Increased grazing pressure has resulted in plains rough fescue to be present in low amounts if present and needle and thread replacing western porcupine grass. It tends to be a mosaic with shrub and tree communities.

CPA48: Blue grama- Sand grass- Needle and thread

Grazing has result in grazing tolerant species like needle and thread and blue grama to be dominant, eliminating plains rough fescue. This community is more prevalent on south facing slopes or drier areas.

CPA33: Sheep fescue- Needle and thread- June grass

This early successional community has resulted due to disturbances like heavy grazing or burning that has resulted in the area to become drier. If litter is present, it is in very low amounts. Therefore it is as productive of CPA48 as it consists of grazing tolerant species and higher amounts of forbs.

9.2.2 Sand grass/ Juniper (subxeric/poor): Shrubland

Characteristic Species:

Tree: Aspen
Shrub: Creeping juniper
Grass: Sand grass, Sand dropseed, Sedge species, Plains rough fescue, Western porcupine grass, June grass, Blue grama
Forb: Low goldenrod

Plant Community Types:

CPC16: Juniper/ Plains rough fescue (19)
CPC17: Juniper/ Sand grass- Sedge (5)
CPC18: Juniper- Bearberry/ Sand grass (15)
CPC2: Water birch- Juniper (3)
CPC3: Bebb willow- Rose/ Slender wheat grass (5)

CPC16. Juniper/Plains rough fescue

(Juniperus horizontalis/Festuca hallii)

n=5 This is a late seral community associated with the loamy sand soils found in the Central Parkland. It is a grassland type with a strong presence of creeping juniper and plains rough fescue. Mixed with this grassland is an aspen poplar shrubland. The different communities are spatially mixed into a mosaic with the presence of each community highly dependent on the surface expression of the land form. Determining characteristics include aspect, slope and depth to the water table. This specific community is found on areas with a level, or nearly level, or southerly aspect. It is found where the water table is greater than 2 m from the surface.

Natural Subregion: CENTRAL PARKLAND

Ecosite: b Sandgrass/Juniper (subxeric/poor)

Ecosite Phase: b2 shrubland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
CREEPING JUNIPER *(Juniperus horizontalis)*	26	19-40	100
PRAIRIE ROSE *(Rosa arkansana)*	1	0-3	60
Forb			
COMMON HORSETAIL *(Equisetum arvense)*	1	0-4	40
LOW GOLDENROD *(Solidago missouriensis)*	4	1-9	100
PASTURE SAGEWORT *(Artemisia frigida)*	2	0-6	40
Grass			
BLUE GRAMA *(Bouteloua gracilis)*	3	0-12	80
JUNE GRASS *(Koeleria macrantha)*	1	0-2	60
PLAINS ROUGH FESCUE *(Festuca hallii)*	13	6-25	100
ROCKY MOUNTAIN FESCUE *(Festuca saximontana)*	1	0-6	60
SAND GRASS *(Calamovilfa longifolia)*	3	0-8	100
UNDIFFERENTIATED SEDGE *(Carex)*	14	1-36	100
WESTERN PORCUPINE GRASS *(Stipa curtiseta)*	5	0-11	80

Environmental Variables

Moisture Regime: SUBXERIC()

Nutrient Regime: SUBMESOTROPHIC()

Elevation (range): 655(615-700) M

Slope: 0.5 - 2.5(), 3 - 5(), 6 - 9(), 10 - 15()

Aspect: Northerly(), Southerly()

Soil Drainage: Very rapidly drained(), Rapidly drained()

Soil Subgroup: O.DB, O.R

Soil Series: HCH, WWT

Soil Correlation: SCA 4

Range Site Category: CS, Sa, Sy, WL

Ecological Status Score: 40

Soil Exposure

	Mean	**Min**	**Max**
%:	4	1	24

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	897		
Total	896.72	0	0

Ecologically Sustainable Stocking Rate

2.69 (4.04-1.61) HA/AUM or *0.15 (0.10-0.25) AUM/AC*

On the sites with sand soil or a greater amount of juniper the lower rates should be used. Where the soils are loamy sand or the juniper is less dense, the higher end of the range of the grazing capacity can be used.

CPC17. Juniper/Sand grass-Sedge

(Juniperus horizontalis/Calamovilfa longifolia-Carex spp.)

n=18 This is a late seral community associated with the loamy sand soils found in the Central Parkland. It is a grassland type with a strong presence of creeping juniper and plains rough fescue. Mixed with this grassland is an aspen poplar shrubland. The different communities are spatially mixed into a mosaic with the presence of each community highly dependent on the surface expression of the land form. Determining characteristics include aspect, slope and depth to the water table. This specific community is found on areas with a level, or nearly level, or southerly aspect. It is found where the water table is greater than 2 m from the surface. This community is found on the Capt. Ayre Lake Range Reference Area (both in the exclosure as well grazed portion).

Natural Subregion: CENTRAL PARKLAND

Ecosite: b Sandgrass/Juniper (subxeric/poor)

Ecosite Phase: b2 shrubland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
ASPEN *(Populus tremuloides)*	2	0-10	56
CHOKE CHERRY *(Prunus virginiana)*	2	0-7	61
COMMON BEARBERRY *(Arctostaphylos uva-ursi)*	2	0-7	33
CREEPING JUNIPER *(Juniperus horizontalis)*	21	5-57	100
UNDIFFERENTIATED ROSE *(Rosa)*	3	0-5	94
Forb			
FIELD MOUSE-EAR CHICKWEED *(Cerastium arvense)*	1	0-7	50
GOLDEN BEAN *(Thermopsis rhombifolia)*	1	0-3	39
LOW GOLDENROD *(Solidago missouriensis)*	1	0-6	50
PASTURE SAGEWORT *(Artemisia frigida)*	2	0-6	67
PRAIRIE SAGEWORT *(Artemisia ludoviciana)*	1	0-2	44
UNDIFFERENTIATED EVERLASTINGS *(Antennaria)*	1	0-4	39
Grass			
BLUE GRAMA *(Bouteloua gracilis)*	1	0-6	50
JUNE GRASS *(Koeleria macrantha)*	2	0-12	83
NEEDLE-AND-THREAD *(Stipa comata)*	2	0-6	72
PLAINS ROUGH FESCUE *(Festuca hallii)*	1	0-3	61
ROCKY MOUNTAIN FESCUE *(Festuca saximontana)*	3	0-8	72
SAND GRASS *(Calamovilfa longifolia)*	5	0-10	89
UNDIFFERENTIATED SEDGE *(Carex)*	9	2-32	100
WESTERN PORCUPINE GRASS *(Stipa curtiseta)*	2	0-8	56

Environmental Variables

Moisture Regime: SUBXERIC()

Nutrient Regime: SUBMESOTROPHIC()

Elevation (range): 685(668-715) M

Slope: 3 - 5(), 6 - 9(), 10 - 15(), 16 - 30(), 31 - 45()

Aspect:

Soil Drainage: Very rapidly drained(), Rapidly drained()

Soil Subgroup: O.R

Soil Series: ERT, HCH, WWT, ZGW, ZUN

Soil Correlation: SCA 4

Range Site Category: CS, Sa, Sy, WL

Ecological Status Score: 40

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	775	336	1121
Total	775.29	336.27	1120.9

Ecologically Sustainable Stocking Rate

2.70 (4.05-1.62) HA/AUM or *0.15 (0.10-0.25) AUM/AC*

On the sites with sand soil or a greater amount of juniper the lower rates should be used. Where the soils are loamy sand or the juniper is less dense, the higher end of the range of the grazing capacity can be used.

CPC18. Juniper-Bearberry/Sand grass

(Juniper horizontalis/Arctostaphylos uva-ursi/Calamovilfa longifolia)

n=15 This community is described from Wainwright Ecological Sand Dunes and Canadian Forces Base Wainwright. It commonly occurs on Orthic Regosolic soils where drainage is rapid, moisture conditions are xeric and nutrients are submesotrophic (Wheatly and Bentz 2002). This community is formed on sandy, upland plains where little soil formation is evident and forbs comprise a higher cover than grass.

Natural Subregion: CENTRAL PARKLAND

Ecosite: b Sandgrass/Juniper (subxeric/poor)

Ecosite Phase: b2 shrubland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Tree			
ASPEN *(Populus tremuloides)*	5	0-22	67
Shrub			
CHOKE CHERRY *(Prunus virginiana)*	1	0-5	53
CREEPING JUNIPER *(Juniperus horizontalis)*	10	3-20	100
UNDIFFERENTIATED ROSE *(Rosa)*	3	0-6	80
Forb			
COMMON BEARBERRY *(Arctostaphylos uva-ursi)*	10	3-30	100
FIELD MOUSE-EAR CHICKWEED *(Cerastium arvense)*	1	0-3	53
GOLDEN ASTER *(Heterotheca villosa)*	1	0-4	47
LOW GOLDENROD *(Solidago missouriensis)*	1	0-4	87
PASTURE SAGEWORT *(Artemisia frigida)*	2	0-7	53
PRAIRIE SAGEWORT *(Artemisia ludoviciana)*	1	0-4	33
SMALL-LEAVED EVERLASTING *(Antennaria parvifolia)*	1	0-6	33
Grass			
JUNE GRASS *(Koeleria macrantha)*	3	0-15	87
NEEDLE-AND-THREAD *(Stipa comata)*	2	0-5	67
PLAINS ROUGH FESCUE *(Festuca hallii)*	2	0-7	67
ROCKY MOUNTAIN FESCUE *(Festuca saximontana)*	3	0-12	73
SAND GRASS *(Calamovilfa longifolia)*	4	1-20	100
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	1	0-3	40
UNDIFFERENTIATED SEDGE *(Carex)*	7	2-29	100
WESTERN PORCUPINE GRASS *(Stipa curtiseta)*	3	0-19	53

Environmental Variables

Moisture Regime: SUBXERIC()

Nutrient Regime: SUBMESOTROPHIC()

Elevation (range): 694(678-706) M

Slope: 3 - 5(), 6 - 9(), 10 - 15(), 16 - 30()

Aspect: Southerly()

Soil Drainage: Rapidly drained()

Soil Subgroup: O.R

Soil Series: ERT, HCH, WWT

Soil Correlation: SCA 4

Range Site Category: Sa, CS

Ecological Status Score: 40

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	764	560	1121
Total	764.25	560.45	1120.9

Ecologically Sustainable Stocking Rate

2.52 (4.04-1.34) HA/AUM or *0.16 (0.10-0.30) AUM/AC*

CPC2. Water birch-Juniper

(Betula occidentalis-Juniperus horizontalis)

n=3 This community type is similar to the community described by (Coenen 2003) in the Wainwright Dunes Ecological Reserve. It was typically found in low-lying, depressional sites between large, widely distributed sand dunes. Soils were sandy, with approximately 50% low shrub and herbaceous vegetative cover. Soil moisture varied from mesic to subxeric. On the higher moisture sites slender wheatgrass, fireweed and purple oatgrass tended to dominate the understory. In contrast on the drier sites hay sedge and bearberry dominated the understory. This community type is moderately productive for domestic livestock. The higher moisture content of the soil favours the growth of more forage than the surrounding grasslands. However, care should be taken that these sites are not over-utilized.

Natural Subregion: CENTRAL PARKLAND

Ecosite: b Sandgrass/Juniper (subxeric/poor)

Ecosite Phase: b2 shrubland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Tree			
ASPEN *(Populus tremuloides)*	4	0-7	67
Shrub			
BEAKED WILLOW *(Salix bebbiana)*	2	0-5	67
CREEPING JUNIPER *(Juniperus horizontalis)*	11	3-20	100
GROUND JUNIPER *(Juniperus communis)*	2	0-5	67
WATER BIRCH *(Betula occidentalis)*	36	30-48	100
WHITE MEADOWSWEET *(Spiraea betulifolia)*	3	1-6	100
Forb			
COMMON BEARBERRY *(Arctostaphylos uva-ursi)*	17	0-35	67
GOLDEN ASTER *(Heterotheca villosa)*	1	0-2	67
MOUNTAIN GOLDENROD *(Solidago spathulata)*	1	0-2	67
NARROW-LEAVED HAWKWEED *(Hieracium umbellatum)*	1	0-1	67
PLAINS WORMWOOD *(Artemisia campestris)*	1	0-1	67
Grass			
HAY SEDGE *(Carex siccata)*	15	0-25	67
PURPLE OAT GRASS *(Schizachne purpurascens)*	2	0-5	33
ROCKY MOUNTAIN FESCUE *(Festuca saximontana)*	2	0-6	33
SAND GRASS *(Calamovilfa longifolia)*	3	0-7	67
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	3	0-10	33
UNDIFFERENTIATED SEDGE *(Carex)*	3	2-5	100
WIRE RUSH *(Juncus balticus)*	3	0-10	33
Lichen			
REINDEER LICHEN *(Cladina mitis)*	12	0-20	67

Environmental Variables

Moisture Regime: SUBMESIC(50), MESIC(50)

Nutrient Regime: SUBMESOTROPHIC(50), MESOTROPHIC(50)

Elevation (range): 684(683-688) M

Slope: 0 - 0.5(100)

Aspect: Variable(100)

Soil Drainage: Rapidly drained(50), Well drained(50)

Soil Subgroup: O.GL, O.R

Soil Series:

Soil Correlation: SCA 4

Range Site Category: CS, Sb

Ecological Status Score: 40

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	500		
Total	500	0	0

Ecologically Sustainable Stocking Rate

1.80 (-) HA/AUM or *0.22 (-) AUM/AC*

CPC3. Bebb willow-Rose/Slender wheat grass

(Salix bebbiana-Rosa acicularis/Agropyron trachycaulum)

n=5 This community type is very similar to the previously described Water birch- Juniper community (CPC2). It occupies similar moisture, nutrient and slope conditions within the Wainwright sand dunes (Coenen 2003). It was typically found in low-lying, depressional sites between large, widely distributed sand dunes. Soils were sandy, with approximately 50% low shrub and herbaceous vegetative cover. This community type is moderately productive for domestic livestock. The higher moisture content of the soil and open nature of the community favours the growth of more forage than the surrounding grasslands. However, care should be taken that these sites are not over- utilized.

Natural Subregion: CENTRAL PARKLAND

Ecosite: b Sandgrass/Juniper (subxeric/poor)

Ecosite Phase: b2 shrubland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Tree			
ASPEN *(Populus tremuloides)*	6	3-12	100
Shrub			
BEAKED WILLOW *(Salix bebbiana)*	23	15-40	100
CREEPING JUNIPER *(Juniperus horizontalis)*	1	0-5	40
JUNE GRASS *(Koeleria macrantha)*	5	0-15	80
KENTUCKY BLUEGRASS *(Poa pratensis)*	4	1-5	100
NARROW-LEAVED MEADOWSWEET *(Spiraea alba)*	4	0-12	40
NORTHERN BEDSTRAW *(Galium boreale)*	1	0-3	60
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	6	2-11	100
SNOWBERRY *(Symphoricarpos albus)*	2	0-6	60
UNDIFFERENTIATED GOLDENROD *(Solidago)*	2	0-4	80
UNDIFFERENTIATED ROSE *(Rosa)*	5	1-10	80
Forb			
BASTARD TOADFLAX *(Comandra umbellata)*	1	0-5	60
COMMON BEARBERRY *(Arctostaphylos uva-ursi)*	1	0-2	60
COMMON YARROW *(Achillea millefolium)*	1	0-3	80
LOW GOLDENROD *(Solidago missouriensis)*	1	0-2	80
PLAINS ROUGH FESCUE *(Festuca hallii)*	1	0-4	40
REINDEER LICHEN *(Cladina mitis)*	2	0-7	40
ROCKY MOUNTAIN FESCUE *(Festuca saximontana)*	5	0-25	60
UNDIFFERENTIATED SEDGE *(Carex)*	11	4-35	100

Environmental Variables

Moisture Regime: MESIC(100)

Nutrient Regime: MESOTROPHIC(100)

Elevation (range): 677(662-693) M

Slope: 0 - 0.5(), 0.5 - 2.5(), 3 - 5()

Aspect: Variable()

Soil Drainage: Well drained(100)

Soil Subgroup: O.R

Soil Series:

Soil Correlation: SCA 4

Range Site Category: CS, Sb

Ecological Status Score: 40

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	1345	1121	1681
Total	1345.08	1120.9	1681.35

Ecologically Sustainable Stocking Rate

2.50 (-) HA/AUM or *0.16 (-) AUM/AC*

9.3 Needle and thread (subxeric/ medium- c)

General Description:
The thin break ecological site applies to steeply sloping landscapes with bedrock at or near the surface. In the Parkland this ecological site is found on the drier hilltops and mid to upper south facing slopes. In moist lower slope positions plains rough fescue often becomes dominant. This ecological site has a predominantly loamy sand texture, but it can also be found on sandy loam or sandy textured soils. The parent materials are generally Glacialfluvial or Glaciallacustrine in origin.

Successional Relationships:
Due to the dry nature of this site grasslands often remain the climax vegetation on these sites. In the absence of disturbance this ecological site is dominated by needle and thread grass, green needle grass with smaller amounts of June grass, sedge and plains rough fescue. Continuous heavy grazing pressure causes needle and thread grass and rough fescue to decline and the site is often dominated by sedge, fringed sage, little club moss and June grass. On drier sites blue grama and fringed sage can often become dominant with increased grazing pressure.

Indicator species: Western porcupine grass, Western wheat grass, Plains rough fescue, Needle and thread grass, Sedge, Pasture sagewort, Prairie selaginella

Site Characteristics:

Moisture Regime: Subxeric, Submesic
Nutrient Regime: Submesotrophic
Topographic Position: Level, Crest, Midslope, Upper slope
Slope: 0.5- 30%
Aspect: Variable

Soil Characteristics:

Organic Thickness: 0-5 cm
Surface Texture: L, LS, SL, S
Depth to Mottles: None
Soil Drainage: Rapidly drained, Well drained
Soil Subgroup: O.R, O.DB, O.BL

9.3.1 Needle and thread (subxeric/ medium): Grassland

Characteristic Species:

Shrub: Creeping juniper
Grass: Needle and thread, Blue grama, Sand grass, Hay sedge, June grass
Forb: Pasture sagewort, Golden aster

Plant Community Types:

CPA11: Needle and thread/ Fringed sage- Little club moss (6)

CPA11. Needle and thread/Fringed sage-Little club moss

(Stipa comata/Artemisia frigida-Selaginella densa)

n=6 This community type is characteristic of dry sites (due to slope, aspect, or soil texture). These six sites are sampled on coarse texture soil (sandy sites). Further sampling is necessary to capture data from sites where slope and aspect are drivers. This community type is somewhat unique in that much of this type has been converted to agricultural use and also that it is occurring so extensive this far north (Geowest 2003).

Natural Subregion: CENTRAL PARKLAND

Ecosite: c Needle and thread (subxeric/medium)

Ecosite Phase: c1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
CHOKE CHERRY *(Prunus virginiana)*	3	0-10	33
CREEPING JUNIPER *(Juniperus horizontalis)*	3	0-10	50
PRAIRIE ROSE *(Rosa arkansana)*	2	0-3	83
Forb			
FIELD MOUSE-EAR CHICKWEED *(Cerastium arvense)*	1	0-2	33
GOLDEN ASTER *(Heterotheca villosa)*	2	0-5	80
PASTURE SAGEWORT *(Artemisia frigida)*	11	0-30	83
PLAINS WORMWOOD *(Artemisia campestris)*	5	0-30	33
PRAIRIE ROCKET *(Erysimum asperum)*	1	0-2	50
PRAIRIE SAGEWORT *(Artemisia ludoviciana)*	1	0-2	50
PRAIRIE SELAGINELLA *(Selaginella densa)*	7	1-10	100
Grass			
ALKALI CORD GRASS *(Spartina gracilis)*	1	0-4	33
BLUE GRAMA *(Bouteloua gracilis)*	6	0-10	83
JUNE GRASS *(Koeleria macrantha)*	5	2-7	100
NEEDLE-AND-THREAD *(Stipa comata)*	26	13-55	100
ROCKY MOUNTAIN FESCUE *(Festuca saximontana)*	1	0-3	50
SAND GRASS *(Calamovilfa longifolia)*	5	0-15	50
WESTERN PORCUPINE GRASS *(Stipa curtiseta)*	3	0-15	33
Lichen			
REINDEER LICHEN *(Cladina mitis)*	2	0-7	50

Environmental Variables

Moisture Regime: SUBXERIC()

Nutrient Regime: SUBMESOTROPHIC()

Elevation (range): (-) M

Slope: 3 - 5()

Aspect: Variable()

Soil Drainage: Rapidly drained()

Soil Subgroup:

Soil Series: HCH, MET, WWT

Soil Correlation: SCA 4

Range Site Category: Sy

Ecological Status Score: 40

Soil Exposure

	Mean	**Min**	**Max**
%:		0	1

Comment: Most sites sampled had a shallow but consistent accumulation of organic matter on soil surface, with typically no greater than 1% exposed sand at surface.

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

2.00 (2.70-1.61) HA/AUM or *0.20 (0.15-0.25) AUM/AC*

9.3.2 Needle and thread (subxeric/ medium): Shrubland

Characteristic Species:

Shrub: Creeping juniper
Grass: Needle and thread, Blue grama, Sand grass, June grass
Forb: Pasture sagewort, Golden aster

Plant Community Types:

CPC19: Juniper/ Little club moss/ Needle and thread (9)
CPC24: Narrow leaved meadowsweet-Aspen (9)

CPC19. Juniper/Little club-moss/Needle and thread

(Juniperus horizontalis/Selaginella densa/Stipa comata)

n=8 This plant community has been identified at Dilberry Lake Provincial Park and in the Wainwright Dunes Ecological Reserve. It occurs on variable slope positions that are rapidly drained with xeric to subxeric moisture conditions. Grazing pressure should be light to preserve this plant community as it can become very unstable with disturbance because of the sandy soils associated with it.

Natural Subregion: CENTRAL PARKLAND

Ecosite: c Needle and thread (subxeric/medium)

Ecosite Phase: c2 shrubland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
CHOKE CHERRY *(Prunus virginiana)*	3	0-8	71
CREEPING JUNIPER *(Juniperus horizontalis)*	15	5-25	100
PRAIRIE ROSE *(Rosa arkansana)*	1	0-2	71
Forb			
FIELD MOUSE-EAR CHICKWEED *(Cerastium arvense)*	1	0-1	71
GOLDEN ASTER *(Heterotheca villosa)*	1	0-2	71
GOLDEN BEAN *(Thermopsis rhombifolia)*	1	0-4	57
HAREBELL *(Campanula rotundifolia)*	2	0-5	71
LAMB'S-QUARTERS *(Chenopodium album)*	1	0-3	71
MOSS PHLOX *(Phlox hoodii)*	1	0-3	86
NARROW-LEAVED HAWKWEED *(Hieracium umbellatum)*	1	0-1	86
PASTURE SAGEWORT *(Artemisia frigida)*	7	1-15	100
PRAIRIE SAGEWORT *(Artemisia ludoviciana)*	2	0-5	57
PRAIRIE SELAGINELLA *(Selaginella densa)*	8	3-15	100
Grass			
HAY SEDGE *(Carex siccata)*	12	10-20	100
JUNE GRASS *(Koeleria macrantha)*	6	5-7	100
NEEDLE-AND-THREAD *(Stipa comata)*	13	5-25	100
SAND GRASS *(Calamovilfa longifolia)*	7	5-10	100
SHEEP FESCUE *(Festuca ovina)*	2	1-8	71
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	3	0-5	86
WESTERN PORCUPINE GRASS *(Stipa curtiseta)*	5	0-15	71
Lichen			
REINDEER LICHEN *(Cladina mitis)*	6	0-10	86

Environmental Variables

Moisture Regime: SUBXERIC()

Nutrient Regime: SUBMESOTROPHIC()

Elevation (range): (-) M

Slope: 0.5 - 2.5()

Aspect: Southerly()

Soil Drainage: Rapidly drained()

Soil Subgroup:

Soil Series: HCH, MET, RED, WWT

Soil Correlation: SCA 4, SCA 7

Range Site Category: CS

Ecological Status Score: 40

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb	150		
Grass	600		
Shrub	90		
Tree			
Total	840	0	0

Ecologically Sustainable Stocking Rate

2.00 (2.69-1.34) HA/AUM or *0.20 (0.15-0.30) AUM/AC*

CPC24. Narrow leaved meadowsweet-Aspen

(Spiraea alba-Populus tremuloides)

n=9 This community is found in the undulating trough area commonly located between the parrallel longitudinal dunes in choppy sandhills of the Central Parkland. It is most common in SCA4 but can be found in SCA7 as well. The associated soil series are Wainwright (WWT), Houcher (HCH), Gloucher (GCH), Red Willow (RED) and Peregrine (PGE). Common soil textures are loamy sand, sand and sandy loam. The sites may be slightly more mesic than the surrounding area. The coarse soils have a lower nutrient status, and these sites frequently have thin A and B horizons. The aspen is typically less than 2m tall as it's a transition from taller and more mature aspen.

Natural Subregion: CENTRAL PARKLAND

Ecosite: c Needle and thread (subxeric/medium)

Ecosite Phase: c2 shrubland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
ASPEN *(Populus tremuloides)*	15	5-30	100
CHOKE CHERRY *(Prunus virginiana)*	2	0-10	56
COMMON BEARBERRY *(Arctostaphylos uva-ursi)*	1	0-8	33
COMMON WILD ROSE *(Rosa woodsii)*	2	0-5	78
CREEPING JUNIPER *(Juniperus horizontalis)*	1	0-4	44
NARROW-LEAVED MEADOWSWEET *(Spiraea alba)*	11	5-20	100
Forb			
BEAKED WILLOW *(Salix bebbiana)*	2	0-4	78
FIELD MOUSE-EAR CHICKWEED *(Cerastium arvense)*	1	0-3	56
GOLDEN ASTER *(Heterotheca villosa)*	1	0-2	44
LOW GOLDENROD *(Solidago missouriensis)*	1	0-4	67
PASTURE SAGEWORT *(Artemisia frigida)*	2	0-9	33
PLAINS WORMWOOD *(Artemisia campestris)*	1	0-3	67
PRAIRIE SAGEWORT *(Artemisia ludoviciana)*	1	0-2	67
Grass			
JUNE GRASS *(Koeleria macrantha)*	2	0-5	89
NEEDLE-AND-THREAD *(Stipa comata)*	1	0-4	44
PLAINS ROUGH FESCUE *(Festuca hallii)*	3	0-13	78
ROCKY MOUNTAIN FESCUE *(Festuca saximontana)*	1	0-3	67
SAND GRASS *(Calamovilfa longifolia)*	3	0-9	89
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	3	0-7	89
UNDIFFERENTIATED SEDGE *(Carex)*	7	5-9	100

Environmental Variables

Moisture Regime: MESIC(), SUBHYGRIC()

Nutrient Regime: MESOTROPHIC()

Elevation (range): 684(673-710) M

Slope: 0.5 - 2.5(), 3 - 5(), 6 - 9(), 10 - 15(), 16 - 30()

Aspect:

Soil Drainage: Rapidly drained(), Well drained()

Soil Subgroup: O.DB, R.DB, O.BL

Soil Series: HCH, RED, WWT, GCH, PGE

Soil Correlation: SCA 4, SCA 7

Range Site Category: Sa, Sy, CS

Ecological Status Score: 27

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	860	560	1569
Total	860.48	560.45	1569.26

Ecologically Sustainable Stocking Rate

1.61 (2.69-1.34) HA/AUM or *0.25 (0.15-0.30) AUM/AC*

9.3.2 Needle and thread (subxeric/ medium): Deciduous

Characteristic Species:

Tree: Aspen
Shrub: Creeping juniper
Grass: Hay sedge, Sand grass, June grass, Plains rough fescue, Needle and thread
Forb: Low Goldenrod

Plant Community Types:

CPD1: Aspen/ Juniper- Sedge (11)
CPD2: Aspen/ Juniper/ Kentucky bluegrass- Sedge (1)
CPD20: Aspen/ Bearberry/ Purple Oat grass- Sedge (20)
CPD15: Plains wormwood/ Sand grass/ Aspen (16)

CPD1. Aspen/Juniper/Sedge

(Populus tremuloides/Juniperus horizontalis/Carex siccata)

n=11 This aspen community is the dominate type in the sandy areas east and southeast of Wainwright. This community type generally occupies the more upland areas and is often associated with grasslands and shrublands on south and west facing slopes. Coenen (2003) described this community on level to gently sloping (less than 5%) sand plains that are typically well drained. As one moves down slope the increase in moisture favours the growth of snowberry, choke cherry and saskatoon. This community type is often fairly open and moderately productive for domestic livestock use. Heavy grazing pressure will often lead to the invasion of agronomic species such as Kentucky bluegrass and smooth brome. In drought years it may be the only source of forage for livestock grazing.

Natural Subregion: CENTRAL PARKLAND

Ecosite: c Needle and thread (subxeric/medium)

Ecosite Phase: c3 deciduous

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Tree			
ASPEN *(Populus tremuloides)*	31	18-50	100
Shrub			
ASPEN *(Populus tremuloides)*	4	0-13	55
CHOKE CHERRY *(Prunus virginiana)*	3	0-10	82
COMMON BEARBERRY *(Arctostaphylos uva-ursi)*	3	0-8	73
CREEPING JUNIPER *(Juniperus horizontalis)*	12	4-25	100
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	1	0-2	55
UNDIFFERENTIATED ROSE *(Rosa)*	2	0-5	82
Forb			
COMMON YARROW *(Achillea millefolium)*	1	0-5	64
CREAM-COLORED VETCHLING *(Lathyrus ochroleucus)*	1	0-3	55
GOLDEN BEAN *(Thermopsis rhombifolia)*	1	0-3	55
LOW GOLDENROD *(Solidago missouriensis)*	1	0-5	64
NORTHERN BEDSTRAW *(Galium boreale)*	1	0-5	64
Grass			
JUNE GRASS *(Koeleria macrantha)*	2	0-4	73
PLAINS ROUGH FESCUE *(Festuca hallii)*	1	0-6	64
PURPLE OAT GRASS *(Schizachne purpurascens)*	1	0-6	55
ROCKY MOUNTAIN FESCUE *(Festuca saximontana)*	3	0-6	91
SAND GRASS *(Calamovilfa longifolia)*	2	0-4	82
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	3	1-5	100
UNDIFFERENTIATED SEDGE *(Carex)*	20	5-65	100

Environmental Variables

Moisture Regime: SUBMESIC()

Nutrient Regime: SUBMESOTROPHIC()

Elevation (range): 684(665-710) M

Slope: 3 - 5(), 6 - 9(), 10 - 15(), 16 - 30()

Aspect: Northerly()

Soil Drainage: Rapidly drained()

Soil Subgroup: O.R

Soil Series: HCH, RED, WWT

Soil Correlation: SCA 4, SCA 7

Range Site Category: Sa, Sy, CS

Ecological Status Score: 25

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb	143	48	238
Grass	554	340	768
Shrub	452	34	870
Tree			
Undifferentiated	785	560	1121
Total	1933.63	982.45	2996.9

Ecologically Sustainable Stocking Rate

2.70 (4.00-1.60) HA/AUM or *0.15 (0.10-0.25) AUM/AC*

CPD2. Aspen/Juniper/Kentucky bluegrass-Sedge

(Populus tremuloides/Juniperus horizontalis/Poa pratensis-Carex siccata)

n=1 This community type is similar to the Aspen/Juniper/Sedge community (CPD1) which was described on submesic sandy sites with medium nutrient regimes in the Parkland subregion. However, this community type contains a high cover of Kentucky bluegrass and likely represents a grazing disclimax of the juniper sedge dominated type. The forage productivity on this community type is moderate and it should be rated as secondary range.

Natural Subregion: CENTRAL PARKLAND

Ecosite: c Needle and thread (subxeric/medium)

Ecosite Phase: c3 deciduous

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Tree			
ASPEN *(Populus tremuloides)*	50	50-50	100
Shrub			
CREEPING JUNIPER *(Juniperus horizontalis)*	7	7-7	100
PRICKLY ROSE *(Rosa acicularis)*	2	2-2	100
WHITE MEADOWSWEET *(Spiraea betulifolia)*	5	5-5	100
Forb			
COMMON BEARBERRY *(Arctostaphylos uva-ursi)*	2	2-2	100
COMMON YARROW *(Achillea millefolium)*	1	1-1	100
GOLDEN BEAN *(Thermopsis rhombifolia)*	1	1-1	100
HAREBELL *(Campanula rotundifolia)*	3	3-3	100
LINDLEY'S ASTER *(Aster ciliolatus)*	1	1-1	100
LOW GOLDENROD *(Solidago missouriensis)*	5	5-5	100
NORTHERN BEDSTRAW *(Galium boreale)*	1	1-1	100
Grass			
HAY SEDGE *(Carex siccata)*	25	25-25	100
KENTUCKY BLUEGRASS *(Poa pratensis)*	30	30-30	100
PURPLE OAT GRASS *(Schizachne purpurascens)*	1	1-1	100
ROCKY MOUNTAIN FESCUE *(Festuca saximontana)*	2	2-2	100
SAND GRASS *(Calamovilfa longifolia)*	1	1-1	100
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	7	7-7	100

Environmental Variables

Moisture Regime: SUBMESIC()

Nutrient Regime: SUBMESOTROPHIC()

Elevation (range): 670(-) M

Slope: 6 - 9()

Aspect: Northerly()

Soil Drainage: Rapidly drained()

Soil Subgroup: O.R

Soil Series: HCH, RED, WWT

Soil Correlation: SCA 4

Range Site Category: CS, Sa

Ecological Status Score: 10

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

2.69 (4.04-1.61) HA/AUM or *0.15 (0.10-0.25) AUM/AC*

CPD15. Plains wormwood/Sandgrass/Aspen

(Artemisia campestris-Calamovilfa longifolia/Populus tremuloides)

n=16 This modified community is typical of the burned and disturbed aspen dominated community types of the sandy areas east and southeast of Wainwright. This community type generally occupies upland areas and is often associated with the fringe areas of grass and shrublands on south and west facing slopes. Repeated burning keeps the aspen in the sapling stage and eliminates the growth of juniper and bearberry in the understory. The dry site conditions favours the growth of plains wormwood and sand grass.

Natural Subregion: CENTRAL PARKLAND

Ecosite: c Needle and thread (subxeric/medium)

Ecosite Phase: c3 deciduous

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Tree			
ASPEN *(Populus tremuloides)*	9	1-15	100
Shrub			
CHOKE CHERRY *(Prunus virginiana)*	4	0-7	88
COMMON BEARBERRY *(Arctostaphylos uva-ursi)*	2	0-9	50
COMMON WILD ROSE *(Rosa woodsii)*	2	0-8	75
Forb			
COMMON SCOURING-RUSH *(Equisetum hyemale)*	1	0-1	50
COMMON YARROW *(Achillea millefolium)*	1	0-2	63
FIELD MOUSE-EAR CHICKWEED *(Cerastium arvense)*	2	1-4	80
GOLDEN ASTER *(Heterotheca villosa)*	2	0-4	75
LOW GOLDENROD *(Solidago missouriensis)*	1	0-10	63
PASTURE SAGEWORT *(Artemisia frigida)*	2	0-10	56
PLAINS WORMWOOD *(Artemisia campestris)*	5	2-13	100
PRAIRIE SAGEWORT *(Artemisia ludoviciana)*	1	0-3	75
Grass			
JUNE GRASS *(Koeleria macrantha)*	3	1-5	100
NEEDLE-AND-THREAD *(Stipa comata)*	2	0-4	69
PLAINS ROUGH FESCUE *(Festuca hallii)*	2	0-4	81
ROCKY MOUNTAIN FESCUE *(Festuca saximontana)*	3	0-7	69
SAND GRASS *(Calamovilfa longifolia)*	5	2-7	100
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	1	0-3	73
UNDIFFERENTIATED SEDGE *(Carex)*	4	1-9	100
WESTERN PORCUPINE GRASS *(Stipa curtiseta)*	1	0-5	50

Environmental Variables

Moisture Regime: SUBXERIC(), SUBMESIC()

Nutrient Regime: SUBMESOTROPHIC()

Elevation (range): 682(665-704) M

Slope: 3 - 5(), 6 - 9(), 10 - 15(), 16 - 30()

Aspect: Variable(100)

Soil Drainage: Rapidly drained()

Soil Subgroup: O.DB, R.DB, O.R

Soil Series: HCH, WWT

Soil Correlation: SCA 4

Range Site Category: Sa, Sy, CS

Ecological Status Score: 25

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	771	448	1345
Total	770.62	448.36	1345.08

Ecologically Sustainable Stocking Rate

4.04 (4.04-1.61) HA/AUM or *0.10 (0.10-0.25) AUM/AC*

CPD20. Aspen/Bearberry/Purple oatgrass-Sedge

(Populus tremuloides/Arctostaphylos uva-ursi/Schizachne purpurascens-Carex)

n=28 This plant community represents a reference community in areas with coarse textured, fluvial eaolian soil with open poplar cover in the Wainwright area. It is found predominantly in SCA4 and to a lesser degree in SCA7. Soil series are Wainwright (WWT), Houcher (HCH), Red Willow (RED) and Garry (GAR). It's typically located on landscapes of low to moderate relief of longitudinal dunes. The aspen may be stunted or low density due to the nutrient poor soils. Sites on Camp Wainwright have younger aspen in part due to a history of fire. The shrub layer is light with grasses, forbs and sedges prevalent.

Natural Subregion: CENTRAL PARKLAND

Ecosite: c Needle and thread (subxeric/medium)

Ecosite Phase: c3 deciduous

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Tree			
ASPEN *(Populus tremuloides)*	41	12-60	100
Shrub			
ASPEN *(Populus tremuloides)*	2	0-7	54
CHOKE CHERRY *(Prunus virginiana)*	5	0-25	75
COMMON BEARBERRY *(Arctostaphylos uva-ursi)*	5	1-23	100
CREEPING JUNIPER *(Juniperus horizontalis)*	2	0-10	68
SASKATOON *(Amelanchier alnifolia)*	5	0-17	93
SNOWBERRY *(Symphoricarpos albus)*	5	0-19	64
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	2	0-14	39
UNDIFFERENTIATED ROSE *(Rosa)*	5	1-13	100
Forb			
CREAM-COLORED VETCHLING *(Lathyrus ochroleucus)*	2	0-5	86
GOLDEN BEAN *(Thermopsis rhombifolia)*	2	0-6	79
LOW GOLDENROD *(Solidago missouriensis)*	1	0-3	71
NORTHERN BEDSTRAW *(Galium boreale)*	2	0-11	82
TWINING HONEYSUCKLE *(Lonicera dioica)*	1	0-4	57
VEINY MEADOW RUE *(Thalictrum venulosum)*	1	0-3	64
Grass			
PLAINS ROUGH FESCUE *(Festuca hallii)*	1	0-6	54
PURPLE OAT GRASS *(Schizachne purpurascens)*	5	0-16	89
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	2	0-11	93
UNDIFFERENTIATED SEDGE *(Carex)*	11	3-23	100
WHITE-GRAINED MOUNTAIN RICE GRASS *(Oryzopsis asperifolia)*	3	0-15	71

Environmental Variables

Moisture Regime: SUBMESIC()

Nutrient Regime: SUBMESOTROPHIC()

Elevation (range): 687(651-715) M

Slope: 3 - 5(), 6 - 9(), 10 - 15()

Aspect: Variable()

Soil Drainage: Rapidly drained(), Well drained()

Soil Subgroup: O.DB, R.DB, O.BL

Soil Series: HCH, RED, WWT, GAR

Soil Correlation: SCA 4, SCA 7

Range Site Category:Sa, Sy, CS

Ecological Status Score: 40

LFH Statistics (cm)	Mean	Min	Max
Thickness (cm):	5.00	2.00	8.00
Litter:			

Soil Exposure	Mean	Min	Max
%:			
Comment:			

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	806	224	1233
Total	806.19	224.18	1233

Ecologically Sustainable Stocking Rate

2.69 (4.04-1.61) HA/AUM or *0.15 (0.10-0.25) AUM/AC*

9.4 Western porcupine grass (submesic/ medium- d)

General Description:
This ecological site applies to non-saline and non-gleyed Chernozemic and Regosolic soils with soil textures in the moderately coarse (sandy loam) textural subgroup. This ecological site represents the transition from the dry Sands and Choppy Sandhills ecological sites to the Loamy ecological site where moisture is not as limiting. Western porcupine grass and plains rough fescue will become more prevalent as one moves from the Sands and Choppy Sandhills sites to more Loamy sites. On moister areas within this ecological site aspen will invade. Choke cherry is common under the aspen understory of this ecological site, but tends to decline in prevalence under Loamy conditions.

Successional Relationships:
Due to the dry nature of the site often only grasses will dominate the site. Aspen will invade into the moister areas or on northerly aspects to form an aspen snowberry, chokecherry dominated community. Increased grazing pressure will cause western porcupine grass and rough fescue to decline and allow sedge, June grass and fringed sage to increase. Very heavy continuous grazing can often lead to a site that is dominated by bare ground.

Indicator species: Sand grass, Blue grama, Sedge, Plains rough fescue, June grass, Low goldenrod, Pasture sagewort and Creeping Juniper

Site Characteristics:

Moisture Regime: Xeric, Subxeric, Submesic, Mesic, Subhygric
Nutrient Regime: Submesotrophic, Mesotrophic, Permesotrophic
Topographic Position: Level, Crest, Lower slope, Midslope, Upper slope
Slope: 0- 45%
Aspect: Variable, Southerly

Soil Characteristics:

Organic Thickness: 0-5 cm,
Surface Texture: L, LS, SL, S
Soil Drainage: Very rapidly drained, Rapidly drained, Well drained, Mod. Well drained
Soil Subgroup: O.R, O.DB, O.BL

9.4.1 Western porcupine (submesic/ medium): Grassland

Characteristic Species:

Shrub: Creeping juniper

Grass: Sedge, Sand grass, Western porcupine grass, June grass, Plains rough fescue, Blue grama

Forb: Pasture sagewort, Low goldenrod

Plant Community Types:

CPA49: Western porcupine grass- Plains rough fescue (39)
CPA50: Western porcupine grass-Plains rough fescue- Kentucky bluegrass (16)
CPA51: Kentucky bluegrass- Western porcupine grass (17)
CPA52: Slender wheat grass- Kentucky bluegrass (5)
CPA6: Upland sedge- Western porcupine grass (26)
CPA8: Upland sedge- June grass (40)
CPA34: Blue grama- Western porcupine grass/ Pasture sagewort (2)
CPA32: Kentucky bluegrass-Sedge-Western porcupine grass (2)

CPA49. Western Porcupine Grass-Plains Rough Fescue

(Stipa curtiseta-Festuca hallii)

n=39 This is a common reference plant community in the Central Parkland where soils tend towards the sandier side of loam but are not sand. This community makes up the grassland component in the parkland mosaic of aspen forest, shrublands and grasslands. This community is similar to CPA6 (Upland sedge- Western porcupine grass), however found in more mesic areas with a decrease in sedge cover. Increased grazing pressures, may cause a shift from this community to CPA50 (Western porcupine Grass- Plains rough fescue-Kentucky bluegrass). This community is a productive grassland however, is susceptible to invasion of Kentucky bluegrass and smooth brome as well as shrub encroachment if not managed properly. This community is found both SCA4 and SCA7. Within SCA4 the common soils series are Wainwright (WWT), Metisko (MET), and Gloucher (GHC). Within SCA7 the most commonly represented soil series are Elnora (EOR), Irma (IRM), Red Willow (RED) and Garry (GAR), significant but not as common are Bellshill (BEL), Alliance (ACE) and Peregrine (PGE). The soil textures found in these communities are; L, SiL, SL, and LS. This plant community is found within the exclosure and grazed area of the Czar Range Reference Area.

Natural Subregion: CENTRAL PARKLAND

Ecosite: d Western porcupine grass (submesic/medium)

Ecosite Phase: d1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
SILVERBERRY *(Elaeagnus commutata)*	2	0-11	46
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	3	0-16	59
UNDIFFERENTIATED ROSE *(Rosa)*	3	0-9	85
Forb			
BASTARD TOADFLAX *(Comandra umbellata)*	1	0-4	41
GOLDEN ASTER *(Heterotheca villosa)*	1	0-6	36
GOLDEN BEAN *(Thermopsis rhombifolia)*	1	0-4	67
LOW GOLDENROD *(Solidago missouriensis)*	1	0-3	51
PASTURE SAGEWORT *(Artemisia frigida)*	7	2-19	100
UNDIFFERENTIATED EVERLASTINGS *(Antennaria)*	1	0-7	39
Grass			
BLUE GRAMA *(Bouteloua gracilis)*	2	0-10	69
JUNE GRASS *(Koeleria macrantha)*	2	0-6	96
KENTUCKY BLUEGRASS *(Poa pratensis)*	1	0-4	41
NEEDLE-AND-THREAD *(Stipa comata)*	2	0-8	54
PLAINS ROUGH FESCUE *(Festuca hallii)*	4	0-11	97
ROCKY MOUNTAIN FESCUE *(Festuca saximontana)*	1	0-7	41
SAND GRASS *(Calamovilfa longifolia)*	1	0-5	49
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	1	0-5	59
UNDIFFERENTIATED SEDGE *(Carex)*	4	1-13	100
WESTERN PORCUPINE GRASS *(Stipa curtiseta)*	12	5-22	100

Environmental Variables

Moisture Regime: SUBMESIC()

Nutrient Regime: MESOTROPHIC()

Elevation (range): 683(610-719) M

Slope: 0 - 0.5(), 0.5 - 2.5(), 3 - 5(), 6 - 9(), 10 - 15(), 16 - 30()

Aspect: Variable()

Soil Drainage: Rapidly drained(), Well drained()

Soil Subgroup: O.DB, O.BL

Soil Series: EOR, IRM, MET, RED, WWT, ACE, BEL , PGE, GHC, GAR

Soil Correlation: SCA 4, SCA 7

Range Site Category: Lo, Sy, Sa

Ecological Status Score: 40

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	1248	785	1906
Total	1247.74	784.63	1905.53

Ecologically Sustainable Stocking Rate

1.15 (1.34-0.89) HA/AUM or *0.35 (0.30-0.45) AUM/AC*

CPA50. Western Porcupine-Plains Rough Fescue-Kentucky bluegrass

(Stipa curtiseta-Festuca hallii-Poa pratensis)

n=16 This community is the successional community of CPA49 (Western porcupine grass- Plains rough fescue) in which prolonged grazing and/ or overgrazing has resulted in the invasion of Kentucky bluegrass. This community has high forage production; however litter production is lower relative to actual production, due to livestock hitting the green up and Kentucky bluegrass areas repeatedly. This community is found both SCA4 and SCA7. Within SCA4 the common soils series are Wainwright (WWT), Metisko (MET), and Gloucher (GHC). Within SCA7 the most commonly represented soil series are Elnora (EOR), Irma (IRM), Red Willow (RED) and Garry (GAR), significant but not as common are Bellshill (BEL), Alliance (ACE) and Peregrine (PGE). The soil textures found in these communities are; L, SiL, SL, and LS.

Natural Subregion: CENTRAL PARKLAND

Ecosite: d Western porcupine grass (submesic/medium)

Ecosite Phase: d1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
COMMON WILD ROSE *(Rosa woodsii)*	3	0-5	94
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	7	0-13	88
Forb			
COMMON YARROW *(Achillea millefolium)*	1	0-3	69
GOLDEN BEAN *(Thermopsis rhombifolia)*	1	0-7	56
LOW GOLDENROD *(Solidago missouriensis)*	2	0-8	69
NORTHERN BEDSTRAW *(Galium boreale)*	1	0-3	50
PASTURE SAGEWORT *(Artemisia frigida)*	2	0-7	75
PRAIRIE SAGEWORT *(Artemisia ludoviciana)*	1	0-3	75
Grass			
JUNE GRASS *(Koeleria macrantha)*	2	0-5	94
KENTUCKY BLUEGRASS *(Poa pratensis)*	7	3-11	100
PLAINS ROUGH FESCUE *(Festuca hallii)*	7	1-14	100
ROCKY MOUNTAIN FESCUE *(Festuca saximontana)*	1	0-3	38
SAND GRASS *(Calamovilfa longifolia)*	1	0-4	44
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	2	0-9	88
UNDIFFERENTIATED SEDGE *(Carex)*	5	2-11	100
WESTERN PORCUPINE GRASS *(Stipa curtiseta)*	7	1-12	100

Environmental Variables

Moisture Regime: SUBMESIC()

Nutrient Regime: MESOTROPHIC()

Elevation (range): 687(667-745) M

Slope: 0.5 - 2.5(), 3 - 5(), 6 - 9(), 10 - 15(), 16 - 30()

Aspect: Variable()

Soil Drainage: Rapidly drained(), Well drained()

Soil Subgroup: O.DB, O.BL

Soil Series: EOR, IRM, MET, RED, WWT, ACE, BEL, PGE, GHC, GAR

Soil Correlation: SCA 4, SCA 7

Range Site Category: Lo, Sy, Sa

Ecological Status Score: 27

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	1358	897	1681
Total	1358.26	896.72	1681.35

Ecologically Sustainable Stocking Rate

1.15 (1.34-0.89) HA/AUM or *0.35 (0.30-0.45) AUM/AC*

CPA51. Kentucky bluegrass-Western porcupine grass

(Poa pratensis-Stipa curtiseta)

n=17 This community represents a successional community that is a result of heavy grazing or of past cultivation which has been abandoned. Forage production of this community is variable as it ranges from 600 to 1300 lbs/ac. Litter production can be highly variable due to patch grazing occurring on these sites as livestock. These sites are also prone to shrub encroachment as areas that are not being grazed will create microhabitats that favor shrub development. This community is found both SCA4 and SCA7. Within SCA4 the common soils series are Wainwright (WWT), Metisko (MET), and Gloucher (GHC). Within SCA7 the most commonly represented soil series are Elnora (EOR), Irma (IRM), Red Willow (RED) and Garry (GAR), significant but not as common are Bellshill (BEL), Alliance (ACE) and Peregrine (PGE). The soil textures found in these communities are; L, SiL, SL, and LS.

Natural Subregion: CENTRAL PARKLAND

Ecosite: d Western porcupine grass (submesic/medium)

Ecosite Phase: d1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
SILVERBERRY *(Elaeagnus commutata)*	2	0-7	53
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	5	0-12	94
UNDIFFERENTIATED ROSE *(Rosa)*	2	0-6	71
Forb			
COMMON YARROW *(Achillea millefolium)*	1	0-3	59
GOLDEN BEAN *(Thermopsis rhombifolia)*	2	0-7	59
LOW GOLDENROD *(Solidago missouriensis)*	1	0-4	71
PASTURE SAGEWORT *(Artemisia frigida)*	3	0-9	94
PRAIRIE SAGEWORT *(Artemisia ludoviciana)*	1	0-2	47
THREE-FLOWERED AVENS *(Geum triflorum)*	1	0-9	41
UNDIFFERENTIATED EVERLASTINGS *(Antennaria)*	2	0-10	65
Grass			
AWNLESS BROME *(Bromus inermis)*	2	0-5	47
FIELD MOUSE-EAR CHICKWEED *(Cerastium arvense)*	1	0-6	41
JUNE GRASS *(Koeleria macrantha)*	3	0-5	94
KENTUCKY BLUEGRASS *(Poa pratensis)*	7	1-22	100
NEEDLE-AND-THREAD *(Stipa comata)*	1	0-7	41
PLAINS ROUGH FESCUE *(Festuca hallii)*	1	0-4	41
ROCKY MOUNTAIN FESCUE *(Festuca saximontana)*	1	0-2	71
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	3	1-7	100
UNDIFFERENTIATED SEDGE *(Carex)*	4	0-9	94
WESTERN PORCUPINE GRASS *(Stipa curtiseta)*	9	1-15	100

Environmental Variables

Moisture Regime: SUBMESIC()

Nutrient Regime: MESOTROPHIC()

Elevation (range): 658(610-691) M

Slope: 3 - 5(), 6 - 9(), 10 - 15(), 16 - 30(), 31 - 45()

Aspect: Variable()

Soil Drainage: Very rapidly drained(), Rapidly drained(), Well drained()

Soil Subgroup: O.DB, O.BL

Soil Series: EOR, IRM, MET, RED, WWT, ACE, BEL, PGE, GHC, GAR

Soil Correlation: SCA 4, SCA 7

Range Site Category: Lo, Sy, Sa

Ecological Status Score: 15

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	1035	673	1457
Total	1035.18	672.54	1457.17

Ecologically Sustainable Stocking Rate

1.34 (2.02-1.01) HA/AUM or *0.30 (0.20-0.40) AUM/AC*

CPA52. Slender wheat grass-Kentucky bluegrass

(Agropyron trachycaulum-Poa pratensis)

n=5 This modified community is found in areas of level to undulating/ rolling landforms in which have been exposed to some sort of disturbance (i.e. cultivation, burning, or heavy grazing) in which plains rough fescue is very limited. This community is susceptible to Canada thistle invasion as well as shrub encroachment, particularly aspen suckering. This community is productive, however there is little to no litter present. These sites are associated with soils that are coarse in parent material such as loamy sand, but also have an influence of slightly additional moisture. This moisture may be from subirrigation or proximity to low areas. These sites are found along the transition from SCA 4 to SCA 7. The soils series in SCA4 are Gloucher (GHC), Wainwright (WTT) and Ribstone (RIB). For SCA 7 the soil series are Red Willow (RED) and Kerensky (KSY).

Natural Subregion: CENTRAL PARKLAND

Ecosite: d Western porcupine grass (submesic/medium)

Ecosite Phase: d1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
COMMON WILD ROSE *(Rosa woodsii)*	2	0-8	40
SILVERBERRY *(Elaeagnus commutata)*	1	0-4	40
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	2	0-6	40
Forb			
CANADA THISTLE *(Cirsium arvense)*	2	0-7	40
COMMON YARROW *(Achillea millefolium)*	1	0-2	40
CREEPING WHITE PRAIRIE ASTER *(Aster falcatus)*	1	0-6	60
FIELD MOUSE-EAR CHICKWEED *(Cerastium arvense)*	3	0-12	40
LOW GOLDENROD *(Solidago missouriensis)*	2	0-4	60
Grass			
AWNLESS BROME *(Bromus inermis)*	1	0-2	60
FOXTAIL BARLEY *(Hordeum jubatum)*	1	0-2	40
JUNE GRASS *(Koeleria macrantha)*	2	0-8	40
KENTUCKY BLUEGRASS *(Poa pratensis)*	11	2-19	100
NEEDLE-AND-THREAD *(Stipa comata)*	1	0-2	40
PLAINS ROUGH FESCUE *(Festuca hallii)*	1	0-4	40
SAND GRASS *(Calamovilfa longifolia)*	1	0-2	40
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	9	6-15	100
UNDIFFERENTIATED SEDGE *(Carex)*	11	3-22	100
WESTERN PORCUPINE GRASS *(Stipa curtiseta)*	1	0-3	60
WIRE RUSH *(Juncus balticus)*	1	0-2	80

Environmental Variables

Moisture Regime: SUBMESIC()

Nutrient Regime: MESOTROPHIC()

Elevation (range): 681(664-702) M

Slope: 0.5 - 2.5(), 3 - 5(), 6 - 9(), 10 - 15(), 16 - 30(), 31 - 45()

Aspect: Variable()

Soil Drainage: Rapidly drained(), Well drained()

Soil Subgroup: O.DB, O.BL

Soil Series: KSY, RED, RIB, WWT, GHC, KSY

Soil Correlation: SCA 4, SCA 7

Range Site Category: Lo, Sy, Sa

Ecological Status Score: 15

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	1637	1233	2018
Total	1636.51	1232.99	2017.62

Ecologically Sustainable Stocking Rate

1.34 (2.02-1.01) HA/AUM or *0.30 (0.20-0.40) AUM/AC*

Successional pathway: CPA49→ CPA50→ CPA51→ CPA52

CPA49: Western porcupine grass- Plains rough fescue

Common reference plant community in the Central Parkland in areas of where the soils are sandier. Very productive grassland but susceptible to invasion of Kentucky bluegrass with increased grazing pressures.

CPA50: Western porcupine grass- Plains rough fescue- Kentucky bluegrass

Prolonged grazing or over grazing has resulted in Kentucky bluegrass to invade. However, plains rough fescue is still present in some amounts.

CPA51: Kentucky bluegrass- Western porcupine grass

High past use has resulted in plains rough fescue to be significantly reduced and Kentucky bluegrass is now the dominant grass. The patch grazing associated with this community, makes it susceptible to shrub encroachment as microhabitats are formed.

CPA52: Slender wheat grass- Kentucky bluegrass

This community may or may not follow this successional pathway as it is a modified community due to past disturbance. It may have arose due to cultivation, burning or heavy grazing. Plains rough fescue is very limited if present and grazing tolerant species like slender wheat grass and Kentucky bluegrass dominate.

CPA6. Upland sedge-Western porcupine grass

(Carex -Stipa curtiseta)

n=26 This community type is a PNC (reference community) and is associated with sandy dominated soils in the eastern areas of the Central Parkland. It is dominated by western porcupine and plains rough fescue. The presence of sand grass indicates that this plant community is found on Sandy or Sands range sites. This plant community is productive and supports livestock grazing, however if over grazed or grazed in early spring the cover of upland sedge and June grass will increase. This plant community occurs within the Battle River Ridge, Delusion Lake and Metiskow Range Reference Areas (grazed and exclosure).

Natural Subregion: CENTRAL PARKLAND

Ecosite: d Western porcupine grass (submesic/medium)

Ecosite Phase: d1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Forb			
COMMON YARROW *(Achillea millefolium)*	1	0-7	46
LOW GOLDENROD *(Solidago missouriensis)*	2	0-11	59
PASTURE SAGEWORT *(Artemisia frigida)*	3	0-11	62
PRAIRIE SAGEWORT *(Artemisia ludoviciana)*	1	0-6	31
SMALL-LEAVED EVERLASTING *(Antennaria parvifolia)*	1	0-16	31
THREE-FLOWERED AVENS *(Geum triflorum)*	2	0-18	31
Grass			
BLUE GRAMA *(Bouteloua gracilis)*	3	0-17	54
HOOKER'S OAT GRASS *(Helictotrichon hookeri)*	1	0-6	42
JUNE GRASS *(Koeleria macrantha)*	4	0-10	88
PLAINS ROUGH FESCUE *(Festuca hallii)*	11	0-33	92
SAND GRASS *(Calamovilfa longifolia)*	5	0-20	77
UNDIFFERENTIATED SEDGE *(Carex)*	30	13-60	100
WESTERN PORCUPINE GRASS *(Stipa curtiseta)*	14	2-29	100

Environmental Variables

Moisture Regime: SUBMESIC()

Nutrient Regime: MESOTROPHIC()

Elevation (range): (-) M

Slope: 0.5 - 2.5(04), 3 - 5(78), 6 - 9(15), 10 - 15(04)

Aspect: Variable()

Soil Drainage: Very rapidly drained(32), Rapidly drained(68)

Soil Subgroup: O.DB, O.R

Soil Series: CNN, HCH, MET, SCD, WWT

Soil Correlation: SCA 4, SCA 7

Range Site Category: Sa, Sy

Ecological Status Score: 40

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb	150	25	300
Grass	1000	400	1400
Shrub			
Tree			
Total	1150	425	1700

Ecologically Sustainable Stocking Rate

1.16 (1.35-1.01) HA/AUM or *0.35 (0.30-0.40) AUM/AC*

CPA8. Upland sedge-June grass

(Carex -Koeleria macrantha)

n=40 This is an early seral grassland community which is found in association with shrub and tree communities. These different communities are mixed into a mosaic, with the grassland component making 20 - 70% of the landscape. The dominant soil texture is loamy sand, though the Upland sedge- June grass community can also be found on sandy loam and sand soils. This community relies on the presence of grazing in it's history to exist. Most frequently it is found with continuous grazing at moderate stocking rates from the early growing season till past growth is done, i.e. late May until early October. This type can also be sustained under shorter grazing periods such as 2 - 3 months instead of 4 - 6 months when heavier stocking rates are used. Low litter levels are characteristic of this type, i.e. 50 - 150 lbs/ac.

Natural Subregion: CENTRAL PARKLAND

Ecosite: d Western porcupine grass (submesic/medium)

Ecosite Phase: d1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
PRAIRIE ROSE *(Rosa arkansana)*	1	0-4	30
Forb			
FIELD MOUSE-EAR CHICKWEED *(Cerastium arvense)*	2	0-8	60
LOW GOLDENROD *(Solidago missouriensis)*	1	0-5	35
PASTURE SAGEWORT *(Artemisia frigida)*	5	0-25	83
PRAIRIE SAGEWORT *(Artemisia ludoviciana)*	1	0-6	33
SMALL-LEAVED EVERLASTING *(Antennaria parvifolia)*	1	0-8	30
Grass			
BLUE GRAMA *(Bouteloua gracilis)*	5	0-22	70
JUNE GRASS *(Koeleria macrantha)*	7	0-20	98
NEEDLE-AND-THREAD *(Stipa comata)*	7	0-23	93
SAND GRASS *(Calamovilfa longifolia)*	3	0-11	70
SHEEP FESCUE *(Festuca ovina)*	1	0-4	33
UNDIFFERENTIATED SEDGE *(Carex)*	28	9-62	100
WESTERN PORCUPINE GRASS *(Stipa curtiseta)*	3	0-11	46
WESTERN WHEAT GRASS *(Agropyron smithii)*	1	0-11	30

Environmental Variables

Moisture Regime: SUBMESIC()

Nutrient Regime: SUBMESOTROPHIC()

Elevation (range): 680(625-700) M

Slope: 0.5 - 2.5(03), 3 - 5(70), 6 - 9(18), 10 - 15(10)

Aspect: Variable()

Soil Drainage: Very rapidly drained(70), Rapidly drained(22), Well drained(08)

Soil Subgroup: O.DB, O.R

Soil Series: CNN, DCY, HCH, MET, WWT, ZGW, ZUN

Soil Correlation: SCA 4, SCA 7

Range Site Category: Lo, Sa, Sy, WL

Ecological Status Score: 15

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb	220	90	350
Grass	775	575	975
Shrub	13		25
Tree			
Total	1008	665	1350

Ecologically Sustainable Stocking Rate

1.35 (2.02-1.16) HA/AUM or *0.30 (0.20-0.35) AUM/AC*

Where sedge / June grass communities are found the actual stocking rates (removal of biomass) has been measured at .45 -.9 AUM's/ac. A common feature of the sites that have been sampled is that total standing biomass of grass and forbs left in the fall after grazing is 350 - 550 lbs/ac. This represents utilization levels of 45 - 65% of total grass and forbs, or utilization of 55 - 65% of grasses (including sedges).

Successional pathway: CPA6→ CPA8

CPA6: Upland sedge- Western porcupine grass

This community is a reference plant community in areas where sandy soils dominate. This plant community is productive as it is dominated by western porcupine and plains rough fescue as well as carex however if overgrazed or early season grazing will result in the sedge and June grass to increase.

CPA8: Upland sedge- June grass

This community is found in areas where there has been continuous season long grazing under moderate stocking rates or areas with very heavy grazing pressures for short duration. Low litter values are characteristic of this plant community. Additionally this community is found in association with shrub and tree communities.

CPA34. Blue grama-Western porcupine grass/Pasture sagewort

(Bouteloua gracilis-Stipa curtiseta/Artemisia frigida)

n=2 This community is a reference community on the exposed south facing upper slopes and hilltops. It will act as a successional community expanding on mid-slopes and to eastern and western aspects when long term grazing has reduced litter cover. These sites are likely to receive more early season use as they green up faster and are drier because snow does not collect here. This is indicated by the dominance of blue grama grass.

Natural Subregion: CENTRAL PARKLAND

Ecosite: d Western porcupine grass (submesic/medium)

Ecosite Phase: d1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Forb			
BASTARD TOADFLAX *(Comandra umbellata)*	1	0-3	50
BROOMWEED *(Gutierrezia sarothrae)*	1	1-2	100
CUT-LEAVED ANEMONE *(Anemone multifida)*	2	2-2	100
GOLDEN BEAN *(Thermopsis rhombifolia)*	1	0-2	50
PASTURE SAGEWORT *(Artemisia frigida)*	17	15-19	100
SLENDER BLUE BEARDTONGUE *(Penstemon procerus)*	2	0-3	50
Grass			
BLUE GRAMA *(Bouteloua gracilis)*	13	8-18	100
JUNE GRASS *(Koeleria macrantha)*	2	1-3	100
NORTHERN WHEAT GRASS *(Agropyron dasystachyum)*	1	1-2	100
PLAINS ROUGH FESCUE *(Festuca hallii)*	8	6-11	100
THREAD-LEAVED SEDGE *(Carex filifolia)*	14	11-17	100
WESTERN PORCUPINE GRASS *(Stipa curtiseta)*	10	9-11	100

Environmental Variables

Moisture Regime: SUBXERIC(100)

Nutrient Regime: SUBMESOTROPHIC(100)

Elevation (range): (-) M

Slope: 10 - 15()

Aspect: Southerly()

Soil Drainage: Well drained()

Soil Subgroup: O.B, O.DB, O.BL

Soil Series:

Soil Correlation: SCA 4, SCA 7, SCA 9, SCA 10

Range Site Category: Lo, TB

Ecological Status Score: 27

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

2.02 (4.04-1.34) HA/AUM or *0.20 (0.10-0.30) AUM/AC*

CPA32. Kentucky bluegrass-Sedge-Western porcupine grass

(Poa pratensis-Carex spp.-Stipa curtiseta)

n=2 This is a mid seral plant community and is associated with loamy soils. These sites have typically been moderately to heavily grazed or grazed too early in the growing season. Since plains rough fescue is still present on these sites they should be grazed late and rested during most of the growing season to promote recovery of plains rough fescue.

Natural Subregion: CENTRAL PARKLAND

Ecosite: d Western porcupine grass (submesic/medium)

Ecosite Phase: d1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
PRAIRIE ROSE *(Rosa arkansana)*	5	1-10	50
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	1	1-2	25
Forb			
GAILLARDIA *(Gaillardia aristata)*	1	1-2	50
LOW GOLDENROD *(Solidago missouriensis)*	1	1-3	100
PASTURE SAGEWORT *(Artemisia frigida)*	1	1-2	25
WOOLLY CINQUEFOIL *(Potentilla hippiana)*	2	1-3	100
Grass			
JUNE GRASS *(Koeleria macrantha)*	2	1-5	50
KENTUCKY BLUEGRASS *(Poa pratensis)*	30	10-50	100
PLAINS REED GRASS *(Calamagrostis montanensis)*	5	1-10	50
PLAINS ROUGH FESCUE *(Festuca hallii)*	7	1-10	100
UNDIFFERENTIATED SEDGE *(Carex)*	25	10-50	100
WESTERN PORCUPINE GRASS *(Stipa curtiseta)*	10	1-20	100

Environmental Variables

Moisture Regime: SUBMESIC()

Nutrient Regime: MESOTROPHIC()

Elevation (range): (-) M

Slope: 6 - 9(), 10 - 15()

Aspect: Level(), Westerly()

Soil Drainage: Well drained()

Soil Subgroup: O.B, O.DB, O.BL

Soil Series:

Soil Correlation: SCA 7, SCA 9, SCA 10

Range Site Category: Lo, TB

Ecological Status Score: 15

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=7

	Mean	**Min**	**Max**
Forb	150	30	270
Grass	1400	400	200
Shrub	30		90
Tree			
Total	1580	430	560

Ecologically Sustainable Stocking Rate

1.61 (4.04-1.34) HA/AUM or *0.25 (0.10-0.30) AUM/AC*

9.4.2 Western porcupine grass (submesic/ medium): Shrubland

Characteristic Species:

Shrub: Choke cherry, Saskatoon, Silverberry, Snowberry
Grass: Sand grass, Smooth brome, Needle and thread
Forb: Pasture sagewort, Low goldenrod, Western Canada violet

Plant Community Types:

CPC1: Silverberry- Prickly Rose/ June grass- Sand grass (10)
CPC22: Rose- Silverberry/Kentucky bluegrass (18)
CPC7: Choke cherry- Saskatoon/ Smooth brome (1)
CPC21: Snowberry- Silverberry/ Needle and thread- Kentucky bluegrass (11)

CPC1. Silverberry-Prickly Rose/June grass-Sandgrass

(Elaeagnus comutata-Rosa acicularis/Koeleria macrantha-Calamovilfa longifolia)

n=10 This community type was described in the sandy areas south and east of Wainwright (Coenen 2003). It represents the ecotone between grasslands and forested dominated community types. The higher moisture content on these sites favours the growth of shrub species. In the absence of disturbance this community will undergo succession to an aspen, choke cherry, saskatoon dominated community type. This community type is represented by two moisture regime phases. The moister phase represents invasion of silverberry and choke cherry onto grassland community types. The understory often has rose, snowberry and hay sedge, in the understory. In contrast the drier phase is found on west facing slopes and it is generally dominated by fringed sage and needle and thread grass in the understory. Open patches of sand are often typical in the drier phase. This community type can be extensively utilized by livestock, leading to a dominance of Kentucky bluegrass.

Natural Subregion: CENTRAL PARKLAND

Ecosite: d Western porcupine grass (submesic/medium)

Ecosite Phase: d2 shrubland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
ASPEN *(Populus tremuloides)*	2	0-10	30
CHOKE CHERRY *(Prunus virginiana)*	6	0-25	70
SILVERBERRY *(Elaeagnus commutata)*	16	6-35	100
UNDIFFERENTIATED ROSE *(Rosa)*	6	1-15	100
Forb			
COMMON YARROW *(Achillea millefolium)*	1	0-2	60
FIELD MOUSE-EAR CHICKWEED *(Cerastium arvense)*	1	0-4	60
LOW GOLDENROD *(Solidago missouriensis)*	2	0-5	60
PASTURE SAGEWORT *(Artemisia frigida)*	5	0-13	90
PLAINS WORMWOOD *(Artemisia campestris)*	1	0-2	60
PRAIRIE SAGEWORT *(Artemisia ludoviciana)*	1	0-4	60
Grass			
BLUE GRAMA *(Bouteloua gracilis)*	3	0-9	70
JUNE GRASS *(Koeleria macrantha)*	4	1-10	100
NEEDLE-AND-THREAD *(Stipa comata)*	4	0-15	80
PLAINS ROUGH FESCUE *(Festuca hallii)*	2	0-4	60
ROCKY MOUNTAIN FESCUE *(Festuca saximontana)*	2	0-6	60
ROUGH HAIR GRASS *(Agrostis scabra)*	2	0-5	50
SAND GRASS *(Calamovilfa longifolia)*	6	2-14	100
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	2	0-7	80
UNDIFFERENTIATED SEDGE *(Carex)*	11	1-20	100
WESTERN PORCUPINE GRASS *(Stipa curtiseta)*	4	0-7	90

Environmental Variables

Moisture Regime: SUBXERIC(), SUBMESIC(), MESIC()

Nutrient Regime: SUBMESOTROPHIC(), MESOTROPHIC()

Elevation (range): 677(667-687) M

Slope: 3 - 5(), 6 - 9(), 10 - 15(), 16 - 30()

Aspect: Westerly(100)

Soil Drainage: Rapidly drained(), Well drained()

Soil Subgroup: O.DB, O.BL

Soil Series: DCY, EOR, IRM, MET, RED, RIB, WWT

Soil Correlation: SCA 4, SCA 7

Range Site Category: Lo, Sy, Sa

Ecological Status Score: 40

Soil Exposure	**Mean**	**Min**	**Max**
%:	20		
Comment:			

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb	328		
Grass	534		
Shrub	128		
Tree			
Total	990	0	0

Ecologically Sustainable Stocking Rate

1.50 (3.00-1.00) HA/AUM or *0.27 (0.13-0.40) AUM/AC*

CPC22. Rose-Silverberry/Kentucky bluegrass

(Rosa-Elaeagnus commutata/Poa pratensis)

n=18 This plant community represents a successional community from CPC1 (Silver berry- Rose/ June grass- Sand grass) in which Kentucky bluegrass has become dominant primarily due to increased grazing pressures. In areas of greater moisture or north facing slopes it is common to see smooth brome occur in small amounts. This community is found in both SCA4 and SCA7. Common associated soil series are Wainwright (WWT), Elnora (EOR), Red Willow (RED), and Garry (GAR). Other probable soil series include Metisko (MET), Ribstone (RIB), Dolcy (DCY), Irma (IRM), and Bellshill (BEL). The soil textures include sandy loam, loamy sand and loam.

Natural Subregion: CENTRAL PARKLAND

Ecosite: d Western porcupine grass (submesic/medium)

Ecosite Phase: d2 shrubland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
COMMON WILD ROSE *(Rosa woodsii)*	10	3-20	100
SILVERBERRY *(Elaeagnus commutata)*	17	4-25	100
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	1	0-3	28
Forb			
BASTARD TOADFLAX *(Comandra umbellata)*	1	0-4	33
COMMON YARROW *(Achillea millefolium)*	3	0-43	78
LOW GOLDENROD *(Solidago missouriensis)*	1	0-7	56
PASTURE SAGEWORT *(Artemisia frigida)*	2	0-14	67
Grass			
AWNLESS BROME *(Bromus inermis)*	1	0-6	33
JUNE GRASS *(Koeleria macrantha)*	1	0-7	44
KENTUCKY BLUEGRASS *(Poa pratensis)*	30	7-62	100
PASTURE SAGEWORT *(Artemisia frigida)*	2	0-8	56
SAND GRASS *(Calamovilfa longifolia)*	1	0-9	39
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	1	0-7	44
UNDIFFERENTIATED SEDGE *(Carex)*	10	1-15	100
WESTERN PORCUPINE GRASS *(Stipa curtiseta)*	3	0-11	72
WESTERN WHEAT GRASS *(Agropyron smithii)*	2	0-9	44

Environmental Variables

Moisture Regime: SUBMESIC(), MESIC()

Nutrient Regime: MESOTROPHIC()

Elevation (range): 690(657-725) M

Slope: 3 - 5(), 6 - 9(), 10 - 15()

Aspect: Variable()

Soil Drainage: Rapidly drained(), Well drained()

Soil Subgroup: O.DB, O.BL

Soil Series: DCY, EOR, IRM, MET, RED, RIB, WWT, BEL, GAR

Soil Correlation: SCA 4, SCA 7

Range Site Category: Lo, Sy, Sa

Ecological Status Score: 27

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=3

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	1495	1345	1569
Total	1494.53	1345.08	1569.26

Ecologically Sustainable Stocking Rate

1.34 (2.02-1.01) HA/AUM or *0.30 (0.20-0.40) AUM/AC*

CPC7. Choke cherry-Saskatoon/Smooth brome

(Prunus virginiana-Amelanchier alnifolia/Bromus inermis)

n=1 This community was described in a seepage area at the base of a high canyon wall along the Red Deer River, near Dry Island Buffalo Jump Provincial park. This type of community is similar to a community commonly found throughout the Central Parkland on coulee draws on south facing slopes, north facing slopes, eroded knobs. Generally these slope communities are dominated by choke cherry and saskatoon with varying amounts of native grasses and forbs in the understory. They may be encroached with Brome and Poa but generally to a lesser degree (10-20%) then this sampled community shows. The density of shrubs may decrease available forage in the understory and slope may limit livestock access. Further sampling will be needed for this community to represent the observed Choke cherry-Saskatoon slope community commonly observed.

Natural Subregion: CENTRAL PARKLAND

Ecosite: d Western porcupine grass (submesic/medium)

Ecosite Phase: d2 shrubland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
CHOKE CHERRY *(Prunus virginiana)*	60		100
PRICKLY ROSE *(Rosa acicularis)*	3		100
RED-OSIER DOGWOOD *(Cornus stolonifera)*	3		100
SASKATOON *(Amelanchier alnifolia)*	10		100
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	3		100
WILD RED RASPBERRY *(Rubus idaeus)*	10		100
Forb			
CANADA GOLDENROD *(Solidago canadensis)*	1		100
COMMON NETTLE *(Urtica dioica)*	1		100
SHOWY ASTER *(Aster conspicuus)*	1		100
STAR-FLOWERED SOLOMON'S-SEAL *(Smilacina stellata)*	1		100
TWINING HONEYSUCKLE *(Lonicera dioica)*	1		100
WESTERN CANADA VIOLET *(Viola canadensis)*	3		100
WILD LILY-OF-THE-VALLEY *(Maianthemum canadense)*	1		100
WILD SARSAPARILLA *(Aralia nudicaulis)*	1		100
Grass			
AWNLESS BROME *(Bromus inermis)*	80		100

Environmental Variables

Moisture Regime: SUBHYGRIC()

Nutrient Regime: PERMESOTROPHIC()

Elevation (range): 723(-) M

Slope: 10 - 15()

Aspect: Southerly()

Soil Drainage: Moderate well drain()

Soil Subgroup:

Soil Series:

Soil Correlation: SCA 7, SCA 9

Range Site Category: Lo, Sy, Sa

Ecological Status Score: 15

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

1.80 (-) HA/AUM or *0.22 (-) AUM/AC*

CPC21. Snowberry-Silverberry/Needle and Thread-Kentucky bluegrass

(Symphoricarpos occidentalis-Elaeagnus commutata/Stipa comata-Poa pratensis)

n=11 This plant community is the reference community in the d: Western porcupine grass Ecological site and in the g: Plains rough fescue/ Snowberry Ecological site it is classified as a successional community after CPC5 (Snowberry- Silverberry/ Plains rough fescue-Western porcupine grass community). This community is found in areas that are drier and/ or have been heavily grazed with no fescue dominance. This community is found on low- moderate relief longitudinal dunes on very course- fluvial aeolian sands. In areas of higher moisture and nutrients, this community represents as downward trend in ecological status. This community is associated with areas that attract livestock (i.e. water sources, trails, etc.). This community is found in both SCA4 and SCA7. The common soil series are Wainwright (WWT) and Red Willow (RED). Other probable soil series include; Metiskow (MET), Ribstone (RIB), and Garry (GAR). The soil textures that could be expected are loamy sand and/or sandy loam.

Natural Subregion: CENTRAL PARKLAND

Ecosite: d Western porcupine grass (submesic/medium)

Ecosite Phase: d2 shrubland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
ASPEN *(Populus tremuloides)*	1	0-3	36
CHOKE CHERRY *(Prunus virginiana)*	1	0-5	36
COMMON WILD ROSE *(Rosa woodsii)*	7	2-15	100
SILVERBERRY *(Elaeagnus commutata)*	5	2-12	100
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	12	4-30	100
Forb			
COMMON YARROW *(Achillea millefolium)*	1	0-3	64
FIELD MOUSE-EAR CHICKWEED *(Cerastium arvense)*	3	0-7	91
GOLDEN BEAN *(Thermopsis rhombifolia)*	1	0-3	36
LOW GOLDENROD *(Solidago missouriensis)*	2	0-6	64
NORTHERN BEDSTRAW *(Galium boreale)*	1	0-3	45
PASTURE SAGEWORT *(Artemisia frigida)*	4	0-8	82
PRAIRIE SAGEWORT *(Artemisia ludoviciana)*	1	0-3	82
Grass			
JUNE GRASS *(Koeleria macrantha)*	3	1-8	100
KENTUCKY BLUEGRASS *(Poa pratensis)*	9	2-22	100
NEEDLE-AND-THREAD *(Stipa comata)*	3	1-8	100
ROCKY MOUNTAIN FESCUE *(Festuca saximontana)*	1	0-4	73
SAND GRASS *(Calamovilfa longifolia)*	1	0-2	55
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	4	1-9	100
UNDIFFERENTIATED SEDGE *(Carex)*	9	4-15	100
WESTERN PORCUPINE GRASS *(Stipa curtiseta)*	4	0-19	64

Environmental Variables

Moisture Regime: SUBMESIC(), MESIC()

Nutrient Regime: MESOTROPHIC()

Elevation (range): 676(659-702) M

Slope: 3 - 5(), 6 - 9(), 10 - 15()

Aspect:

Soil Drainage: Rapidly drained(), Well drained()

Soil Subgroup: O.DB, O.BL

Soil Series: MET, RED, RIB, WWT, GAR

Soil Correlation: SCA 4, SCA 7

Range Site Category: Sy, Sa

Ecological Status Score: 40 or 27

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	1213	897	1681
Total	1212.61	896.72	1681.35

Ecologically Sustainable Stocking Rate

1.34 (2.02-1.01) HA/AUM or *0.30 (0.20-0.40) AUM/AC*

9.4.3 Western porcupine grass (submesic/ medium): Deciduous

Characteristic Species:

Tree: Aspen
Shrub: Choke cherry, Saskatoon, Snowberry
Grass: Smooth brome, Hay sedge, Kentucky bluegrass
Forb: Northern bedstraw, Veiny meadow rue, Dandelion

Plant Community Types:

CPD3: Aspen/Snowberry- Choke cherry- Saskatoon (52)
CPD17: Choke cherry- Snowberry- Saskatoon/ Aspen (23)
CPD16: Snowberry- Choke cherry/ Smooth brome/ Aspen (10)

CPD3. Aspen/Snowberry-Choke cherry-Saskatoon

(Populus tremuloides/Symphoricarpos occidentalis-Prunus virginiana-Amelanchier)

n=52 This community type is typical of moist draws, and edges of depressional areas where there is higher soil moisture. On sandy soils choke cherry and saskatoon tends to dominate the understory of this community type. In the Wainwright Dunes Ecological Reserve Coenen (2003) found this community type to be restricted to northerly aspects in small narrow bands. In contrast the loamy soils tend to be dominated by snowberry. Forage production can be quite variable in this community type varying from 600 to over 2600 kg/ha. Use by livestock will depend on the density of shrubs. Stands with a high shrub density have very little palatable forage available for domestic livestock and should be rated as non-use. In contrast more open stands have a good cover of grasses and forbs and should be considered secondary range. The rose species present are prickly rose and common wild rose.

Natural Subregion: CENTRAL PARKLAND

Ecosite: d Western porcupine grass (submesic/medium)

Ecosite Phase: d3 deciduous

Plant Composition	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Tree			
ASPEN *(Populus tremuloides)*	40	15-70	100
Shrub			
ASPEN *(Populus tremuloides)*	2	0-16	37
CHOKE CHERRY *(Prunus virginiana)*	8	0-46	94
SASKATOON *(Amelanchier alnifolia)*	9	0-26	98
SNOWBERRY *(Symphoricarpos albus)*	10	1-25	100
UNDIFFERENTIATED ROSE *(Rosa)*	9	2-20	100
WILD RED RASPBERRY *(Rubus idaeus)*	3	0-17	58
Forb			
CREAM-COLORED VETCHLING *(Lathyrus ochroleucus)*	2	0-14	75
LINDLEY'S ASTER *(Aster ciliolatus)*	1	0-5	46
NORTHERN BEDSTRAW *(Galium boreale)*	2	0-9	94
STAR-FLOWERED SOLOMON'S-SEAL *(Smilacina stellata)*	1	0-8	69
VEINY MEADOW RUE *(Thalictrum venulosum)*	2	0-9	64
WILD STRAWBERRY *(Fragaria virginiana)*	1	0-5	50
WILD VETCH *(Vicia americana)*	1	0-5	56
Grass			
AWNLESS BROME *(Bromus inermis)*	1	0-9	40
HAY SEDGE *(Carex siccata)*	5	0-19	52
PURPLE OAT GRASS *(Schizachne purpurascens)*	4	0-27	77
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	2	0-8	65
UNDIFFERENTIATED SEDGE *(Carex)*	4	0-20	44
WHITE-GRAINED MOUNTAIN RICE GRASS *(Oryzopsis asperifolia)*	2	0-10	67

Environmental Variables

Moisture Regime: SUBMESIC(100)

Nutrient Regime: MESOTROPHIC(100)

Elevation (range): 696(630-733) M

Slope: 3 - 5(), 6 - 9(), 10 - 15(), 16 - 30(), 31 - 45(), 46 - 70()

Aspect: Northerly()

Soil Drainage: Well drained(100)

Soil Subgroup: O.DB, O.BL

Soil Series: DCY, HND, MET, RED, RIB, WWT

Soil Correlation: SCA 4, SCA 7

Range Site Category: Lo, Sy, Sa

Ecological Status Score: 25

LFH Statistics (cm)	Mean	Min	Max
Thickness (cm):	5.00	1.00	10.00
Litter:			

Soil Exposure	Mean	Min	Max
%:	0		
Comment:			

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	237	170	302
Grass	727	50	1948
Shrub	660	156	1240
Tree			
Undifferentiated	671	168	1681
Total	2295.26	544.14	5171.35

Ecologically Sustainable Stocking Rate

2.02 (2.69-1.34) HA/AUM or *0.20 (0.15-0.30) AUM/AC*

CPD17. Choke cherry-Snowberry-Saskatoon/Aspen

(Prunus virginiana-Symphoricarpus occidentalis-Amelanchier alnifolia/Populus tremuloides)

n=23 This community type was described on the Canadian Forces Base Wainwright and represents repeated fire disturbance of the Aspen/ Snowberry- Choke cherry- Saskatoon (CPD3) community type. Repeated burning of these aspen stands lowers the cover of aspen and the understory shrub species. Burning also tends to dry the site and often the understory vegetation is also reduced in cover. Forage production on these sites is generally half of what is produced in the undisturbed aspen forest.

Natural Subregion: CENTRAL PARKLAND

Ecosite: d Western porcupine grass (submesic/medium)

Ecosite Phase: d3 deciduous

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Tree			
ASPEN *(Populus tremuloides)*	17	2-40	100
Shrub			
CHOKE CHERRY *(Prunus virginiana)*	8	2-15	100
SASKATOON *(Amelanchier alnifolia)*	6	0-12	100
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	6	0-20	91
UNDIFFERENTIATED ROSE *(Rosa)*	9	2-24	100
WILD RED RASPBERRY *(Rubus idaeus)*	1	0-5	39
Forb			
COMMON YARROW *(Achillea millefolium)*	1	0-3	57
CREAM-COLORED VETCHLING *(Lathyrus ochroleucus)*	1	0-5	43
GOLDEN BEAN *(Thermopsis rhombifolia)*	1	0-6	78
NORTHERN BEDSTRAW *(Galium boreale)*	3	0-7	100
UNDIFFERENTIATED GOLDENROD *(Solidago)*	1	0-4	70
WILD STRAWBERRY *(Fragaria virginiana)*	1	0-3	43
Grass			
AWNLESS BROME *(Bromus inermis)*	3	0-6	39
JUNE GRASS *(Koeleria macrantha)*	1	0-3	52
KENTUCKY BLUEGRASS *(Poa pratensis)*	1	0-6	61
PLAINS ROUGH FESCUE *(Festuca hallii)*	3	0-5	83
PURPLE OAT GRASS *(Schizachne purpurascens)*	1	0-5	57
SAND GRASS *(Calamovilfa longifolia)*	1	0-3	39
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	3	0-7	91
UNDIFFERENTIATED SEDGE *(Carex)*	10	3-19	100

Environmental Variables

Moisture Regime: SUBMESIC(100)

Nutrient Regime: MESOTROPHIC(100)

Elevation (range): 696(673-731) M

Slope: 3 - 5(), 6 - 9(), 10 - 15(), 16 - 30()

Aspect: Northerly()

Soil Drainage: Well drained(100)

Soil Subgroup: O.DB, O.BL

Soil Series: DCY, HND, MET, RED, RIB, WWT

Soil Correlation: SCA 4, SCA 7

Range Site Category: Lo, Sy, Sa

Ecological Status Score: 25

Soil Exposure	**Mean**	**Min**	**Max**
%:	0		

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	1204	448	2242
Total	1203.75	448.36	2241.8

Ecologically Sustainable Stocking Rate

2.20 (2.69-1.34) HA/AUM or *0.18 (0.15-0.30) AUM/AC*

CPD16. Snowberry-Choke cherry/Smooth brome/Aspen

(Symphoricarpus occidentalis-Prunus virginiana/Poa pratensis-Bromus inermis/Populus tremuloides)

n=10 This community type was described on the Canadian Forces Base Wainwright and represents repeated fire and grazing disturbance of the Aspen/ Snowberry- Choke cherry-Saskatoon (CPD17) dominated community type. Repeated burning of these aspen stands lowers the cover of aspen and the understory shrub species. Burning also tends to dry the site and often the understory vegetation is also reduced in cover. On moister heavily grazed sites Kentucky bluegrass and smooth brome will invade onto these sites to form this community type. Forage production on this community type is often quite high because of the favourable moisture conditions.

Natural Subregion: CENTRAL PARKLAND

Ecosite: d Western porcupine grass (submesic/medium)

Ecosite Phase: d3 deciduous

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Tree			
ASPEN *(Populus tremuloides)*	18	4-40	100
Shrub			
CHOKE CHERRY *(Prunus virginiana)*	7	4-16	100
NORTHERN GOOSEBERRY *(Ribes oxyacanthoides)*	1	0-3	70
SASKATOON *(Amelanchier alnifolia)*	4	0-10	80
SNOWBERRY *(Symphoricarpos albus)*	13	4-20	100
UNDIFFERENTIATED ROSE *(Rosa)*	10	5-16	100
WILD RED RASPBERRY *(Rubus idaeus)*	3	1-5	100
Forb			
CANADA GOLDENROD *(Solidago canadensis)*	1	0-3	50
COMMON DANDELION *(Taraxacum officinale)*	2	0-3	80
LINDLEY'S ASTER *(Aster ciliolatus)*	1	0-5	70
NORTHERN BEDSTRAW *(Galium boreale)*	4	1-7	100
STAR-FLOWERED SOLOMON'S-SEAL *(Smilacina stellata)*	1	0-3	50
VEINY MEADOW RUE *(Thalictrum venulosum)*	3	0-9	60
WILD STRAWBERRY *(Fragaria virginiana)*	1	0-3	60
WILD VETCH *(Vicia americana)*	1	0-4	50
Grass			
AWNLESS BROME *(Bromus inermis)*	11	6-15	100
KENTUCKY BLUEGRASS *(Poa pratensis)*	3	0-11	90
PURPLE OAT GRASS *(Schizachne purpurascens)*	1	0-3	60
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	4	1-6	100
UNDIFFERENTIATED SEDGE *(Carex)*	12	6-19	100

Environmental Variables

Moisture Regime: SUBMESIC(50), MESIC(50)

Nutrient Regime: MESOTROPHIC(100)

Elevation (range): 712(679-736) M

Slope: 0.5 - 2.5(), 3 - 5(), 6 - 9(), 10 - 15()

Aspect: Northerly(100)

Soil Drainage: Well drained(100)

Soil Subgroup: O.DB, O.BL

Soil Series: DCY, HND, MET, RED, RIB, WWT

Soil Correlation: SCA 4, SCA 7

Range Site Category: Lo, Sy, Sa

Ecological Status Score: 10

Soil Exposure

	Mean	**Min**	**Max**
%:	0		

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	1872	785	2466
Total	1871.9	784.63	2465.98

Ecologically Sustainable Stocking Rate

2.24 (2.69-1.34) HA/AUM or *0.18 (0.15-0.30) AUM/AC*

9.4.4 Western porcupine grass (submesic/ medium): Tame

Characteristic Species:

Grass: Crested wheat grass, Smooth brome, Meadow brome, Kentucky bluegrass
Forb: Fringed sage

Plant Community Types:

CPB5: Crested wheat grass (17)

CPB5. Crested wheat grass

(Agropyron pectiniforme)

n=17 In this community crested wheat grass is the dominant species. Present to a significant degree but less than the crested wheat grass are kentucky bluegrass, smooth brome or meadow brome and pasture sage. These sites were typically seeded in the 1980's as a range improvement program. The sites were seeded as crested wheat grass monocultures and mixes with or without alfalfa, meadow brome and occasionally smooth brome. The sites are typically found on sandier soils in the southeastern part of the Central Parkland region, in the Wainwright and Provost area. The sites fequently have 5 - 15% bare soil. This community type can be managed indefinitely for mid to late spring grazing, it is unpalatable for summer grazing and of limited use for fall grazing.

Natural Subregion: CENTRAL PARKLAND

Ecosite: d Western porcupine grass (submesic/medium)

Ecosite Phase: d6 tame

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Forb			
COMMON YARROW *(Achillea millefolium)*	1	0-5	47
PASTURE SAGEWORT *(Artemisia frigida)*	11	0-26	82
PRAIRIE SAGEWORT *(Artemisia ludoviciana)*	1	0-5	41
Grass			
AWNLESS BROME *(Bromus inermis)*	9	0-32	71
CRESTED WHEAT GRASS *(Agropyron pectiniforme)*	38	14-72	100
KENTUCKY BLUEGRASS *(Poa pratensis)*	5	0-16	76
MEADOW BROME *(Bromus biebersteinii)*	2	0-19	24
UNDIFFERENTIATED SEDGE *(Carex)*	4	0-18	41

Environmental Variables

Moisture Regime: XERIC(), SUBXERIC(), SUBMESIC()

Nutrient Regime: SUBMESOTROPHIC(), MESOTROPHIC()

Elevation (range): 685(627-758) M

Slope: 0 - 0.5(), 0.5 - 2.5()

Aspect: Southerly(), Variable()

Soil Drainage: Very rapidly drained(), Rapidly drained(), Well drained()

Soil Subgroup: O.DB, O.R

Soil Series: CNN, CPL, DCY, EOR, HCH, HND, MET, WWT

Soil Correlation: SCA 4, SCA 7, SCA 10

Range Site Category: Lo, Sy, Sa

Ecological Status Score: 12

Soil Exposure

	Mean	**Min**	**Max**
%:	12	0	30

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

0.57 (0.80-0.40) HA/AUM or *0.71 (0.51-1.01) AUM/AC*

9.5 Saline blowout (mesic/ poor- e)

General Description: The blowout ecological site applies to areas where the soils are dominated or co-dominated by the Solonetzic order. Solonetzic soils have a impervious hardpan layer in the subsoil that is caused by excess sodium. The land surface is frequently characterized by eroded pits over 20 to 50% of the area. Plains rough fescue generally occupies the areas surrounding the pits where the soil depth of the A horizon is slightly deeper.

Successional Relationships: The unfavorable ratios of Ca to Na, the hard columnar B-horizon and the impermeable clay pan close to the surface generally favor the growth of grasses over trees and shrubs. Heavy grazing pressure will lead to a decline in rough fescue and allow sedge and fringed sage to increase. Continued heavy grazing will eventually lead to an increase in bare ground and larger areas of eroded pits.

Indicator species: Western wheat grass, Sedge, Plains rough fescue, Pasture sagewort

Site Characteristics:

Moisture Regime: Submesic, Mesic
Nutrient Regime: Submesotrophic, Mesotrophic
Topographic Position: Level
Slope: 0- 2.5%
Aspect: Level

Soil Characteristics:

Organic Thickness: 0-5 cm
Surface Texture: CL
Soil Drainage: Well drained, Moderately well drained
Soil Subgroup: BL.SZ, BL.SS, BL.SO

5.1 Saline blowout (mesic/ poor): Grassland

Community Types:
CPA2: Plains rough fescue- Western wheat grass (6)

CPA2. Plains rough fescue-Western wheat grass

(Festuca hallii-Agropyron smithii)

n=6 This community is found on areas with solonetzic soils within the Central Parkland. Solonetzic soils characteristically have a variation in the depth of Ah layer across the landscape. This forms a vegetation complex consisting of blowouts amongst the fescue grassland. In contrast to loamy chernozemic sites, these have a higher clay content and a higher pH. The blowouts have little to no Ah layer and are dominated by western wheat grass, prairie sage, low goldenrod and rushes. Bare ground is common and litter is sparse to absent on the blowouts. The presence of the Plains rough fescue- Sedge community around the blowout areas is dependent on the development of the Ah layer. Less prevalent in this community is western porcupine grass and pasture sage, which one would expect to find. Sampling on this community is done as a transect across the landscape, sampling both the fescue grassland and the blowout areas to form this community. This is a PNC (reference plant community). This community occurs within the Donalda Range Reference Area.

Natural Subregion: CENTRAL PARKLAND

Ecosite: e saline blowout (mesic/poor)-Solonetzic

Ecosite Phase: e1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
COMMON WILD ROSE *(Rosa woodsii)*	1	0-3	33
Forb			
COMMON YARROW *(Achillea millefolium)*	4	0-8	83
HAREBELL *(Campanula rotundifolia)*	1	0-5	33
LOW GOLDENROD *(Solidago missouriensis)*	5	0-13	83
NORTHERN BEDSTRAW *(Galium boreale)*	3	0-6	83
PRAIRIE SAGEWORT *(Artemisia ludoviciana)*	5	1-12	100
SMOOTH ASTER *(Aster laevis)*	2	0-11	33
TUFTED WHITE PRAIRIE ASTER *(Aster ericoides)*	4	0-13	67
UNDIFFERENTIATED CINQUEFOIL (FORB LAYER) *(Potentilla)*	1	0-3	50
UNDIFFERENTIATED EVERLASTINGS *(Antennaria)*	2	0-5	67
WILD STRAWBERRY *(Fragaria virginiana)*	2	0-8	33
Grass			
INTERMEDIATE OAT GRASS *(Danthonia intermedia)*	3	0-7	50
NORTHERN REED GRASS *(Calamagrostis inexpansa)*	2	0-8	33
PLAINS ROUGH FESCUE *(Festuca hallii)*	39	16-80	100
ROUGH HAIR GRASS *(Agrostis scabra)*	1	0-5	33
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	1	0-3	33
UNDIFFERENTIATED RUSH *(Juncus)*	3	0-11	33
UNDIFFERENTIATED SEDGE *(Carex)*	11	0-31	83
WESTERN WHEAT GRASS *(Agropyron smithii)*	2	0-5	67
WIRE RUSH *(Juncus balticus)*	2	0-3	67

Environmental Variables

Moisture Regime: SUBMESIC(), MESIC()

Nutrient Regime: SUBMESOTROPHIC(), MESOTROPHIC()

Elevation (range): 686(686-686) M

Slope: 0.5 - 2.5()

Aspect: Level()

Soil Drainage: Well drained(44), Moderate well drain(33)

Soil Subgroup: BL.SZ, BL.SS, BL.SO

Soil Series: KLM

Soil Correlation: SCA 7

Range Site Category: BIO, Cy, Lo

Ecological Status Score: 40

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

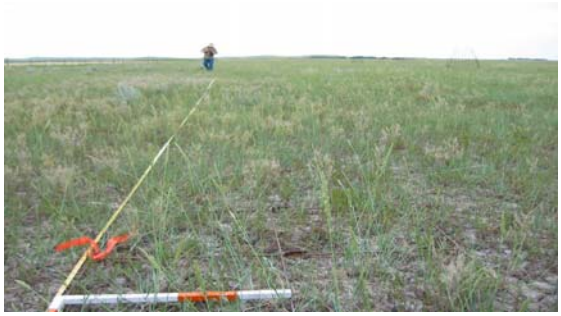
Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb	225	180	270
Grass	1960	1780	2140
Shrub	65	40	90
Tree			
Total	2250	2000	2500

Ecologically Sustainable Stocking Rate

1.50 (1.80-1.34) HA/AUM or *0.27 (0.22-0.30) AUM/AC*

9.6 Western wheat grass (mesic/ medium- f)



General Description: This ecological site is found on a variety of soils but is most commonly found on clay soils that are flooded in the spring as well as on uplands. The parent materials are generally Glaciofluvial or Glaciolacustrine in origin and have silty loam, clay loam or clay textures. This ecological site is often dominated by western wheat grass a species with rhizomatous roots well adapted to the swelling and shrinking of the clay soils.

Successional Relationships: Many of these sites are used as native hay meadows. Where there is no salinity, June grass is an associated species. Both western and northern wheat grasses may be dominant on upland clay soils where green needle grass is often co-dominant. Heavy grazing pressure will cause western wheatgrass to decline and the site will often become dominated by sedge and fringed sage.

Indicator species: Western wheat grass, Sedge, Plains rough fescue, June grass, Bluegrasses, Pasture sagewort

Site Characteristics:

Moisture Regime: Subhygric, Mesic
Nutrient Regime: Mesotrophic
Topographic Position: Level
Slope: 0- 5%
Aspect: Variable

Soil Characteristics:

Organic Thickness: 0- 15 cm
Surface Texture: L, SiCL
Soil Drainage: Well drained, Moderately well drained, Imperfectly drained
Soil Subgroup: D.B. SZ

9.6.1 Western wheat grass (mesic/ medium): Grassland

Community Types:
CPA1: Western wheat grass- Bluegrass (3)

CPA1. Western wheat grass-Bluegrass

(Agropyron smithii-Poa)

n=3 This type is a PNC (reference community) and is associated with the clay dominated solonetzic soils of the floodplain along the Ribstone creek. Total acreage of the type is low. It is a very distinct community dominated by western wheat grass (Agropyron smithii), a species with rhizomatous roots well adapted to the swelling and shrinking of the clay soils. This community is a productive one in respect to grazing and it is quite tolerant of grazing. Litter levels, even in ungrazed sites remain low with some soil left bare or covered in the black flakes of nostoc.

Natural Subregion: CENTRAL PARKLAND

Ecosite: f Western wheat grass (mesic/medium)

Ecosite Phase: f1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Forb			
COMMON PEPPER-GRASS *(Lepidium densiflorum)*	6	0-14	67
CURLED DOCK *(Rumex crispus)*	1	0-2	33
UNDIFFERENTIATED POLYGONUM *(Polygonum)*	1	0-4	33
Grass			
UNDIFFERENTIATED BLUEGRASS *(Poa)*	18	7-36	100
WESTERN WHEAT GRASS *(Agropyron smithii)*	59	50-72	100

Environmental Variables

Moisture Regime: MESIC(), SUBHYGRIC()

Nutrient Regime: MESOTROPHIC()

Elevation (range): (-) M

Slope: 0 - 0.5(72), 3 - 5(27)

Aspect: Variable()

Soil Drainage: Well drained(39), Moderate well drain(26), Imperfectly drained(39)

Soil Subgroup: DB.SZ

Soil Series: HND, NUT, VTR, ZGW, ZUN

Soil Correlation: SCA 4

Range Site Category: BIO, Li, Lo, WL

Ecological Status Score: 40

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb	50	10	90
Grass	1325	1100	1550
Shrub			
Tree			
Total	1375	1110	1640

Ecologically Sustainable Stocking Rate

1.25 (4.05-1.01) HA/AUM or *0.32 (0.10-0.40) AUM/AC*

Forage productivity is increased in years of flooding or frequent rainfall. Extended drought conditions will sharply reduce the productivity from the average. This type is usually primary range.

9.7 Plains rough fescue/ Snowberry (mesic/ rich- g)

General Description: The Loamy/ Plains rough fescue ecological site applies to non-saline and non-gleyed Chernozemic and Regosolic soils with soil textures in the medium and moderately fine textural subgroups. This ecological site is found on level to undulating areas, where the landform is hummocky, rolling or hilly with easterly and westerly aspects. In the southern portion of the parkland the Plains rough fescue ecological site is present on north facing slopes, while at the north end of the parkland the north facing slopes have tree cover and plains rough fescue will be present to a greater degree on southerly aspects. The Plains rough fescue ecological site is found on zonally normal sites and is typified by black, well drained, loamy soils. As sites become more drought prone or increasingly wet the influence of plains rough fescue declines. The aspen and conifer phases represent a moister phase of the Plains rough fescue dominated ecological site. This ecological site is found on the easterly, northerly aspects and lower slope positions where moisture is favorable for the growth of aspen or snowberry-silverberry dominated shrublands. In the north end of the parkland the north facing slopes tend to be aspen dominated and plains rough fescue is found on southerly aspects. Understory vegetation is often very similar to the boreal forest. The Loamy/ Plains rough fescue ecological site is found in both SCA4 and SCA7, and therefore plant communities have been separated depending upon which Soil Correlation Area they fall within.

Successional Relationships: Aspen started to invade the grasslands about 150 years ago. The more moist areas of this ecosite are now being replaced by aspen forest. The areas occupied by aspen are more productive for grass when cleared, moisture and fertility levels are higher, than in the surrounding grasslands. Continued heavy grazing results in plains rough fescue being replaced by wheat grass, western porcupine grass, June grass, bluegrass, and sedge. With heavy use the cover of goldenrod, fringed sage and moss phlox also increase. Much of this ecological site has been broken and seeded to annual crops. The lack of fire has allowed aspen and snowberry to expand rapidly throughout the parkland. Continued heavy grazing in the aspen and shrub communities results in a reduction in native species cover the understory, and is often invaded by Kentucky bluegrass. Smooth brome can also be present on these sites, the presence can be related to disturbance however it can occur without disturbance if a seed source is present and moisture conditions are right.

Indicator species: Plains rough fescue , Western porcupine grass, Western wheat grass, Sedge, June grass, Pasture sagewort, Prairie crocus, Low goldenrod

Site Characteristics:

Moisture Regime: Submesic, Mesic
Nutrient Regime: Submesotrophic, Mesotrophic, Oligotrophic
Topographic Position: Level, Lower slope, Midslope, Upper slope, Toe
Slope: 0-30%
Aspect: Variable, Northerly

Soil Characteristics:

Organic Thickness: 0- 15 cm
Surface Texture: L, LS
Soil Drainage: Well drained, Rapidly drained, Very rapidly drained, Moderately well drained
Soil Subgroup: O.BL, O.DB, O.GL

9.7.1 Plains rough fescue/ Snowberry (mesic/ rich): Grassland

Characteristic Species:

Grass: Plains rough fescue, Sedge, Western porcupine grass, Western wheat grass
Forb: Pasture sagewort, Prairie crocus, Low goldenrod

Community Types:

CPA25: Plains rough fescue (68)
CPA26: Plains rough fescue- Kentucky bluegrass (10)
CPA46: Kentucky bluegrass- Smooth brome (22)
CPA27: Kentucky bluegrass- Slender wheat grass (2)
CPA3: Plains rough fescue- Western porcupine grass (48)
CPA4: Upland sedge- Western wheat grass- Plains rough fescue (2)
CPA5: Upland sedge- Kentucky bluegrass (11)

CPA25. Plains rough fescue

(Festuca hallii)

n=68 This is the reference plant community type found on loamy black chernozemic soils in the Central Parkland that is free of tree and shrub encroachment and has not been heavily grazed. This plant community is found within the exclosures and grazed portions of Torlea E and W as well as the exlclosures of Bruce and Paradise valley Range Reference Areas.

Natural Subregion: CENTRAL PARKLAND

Ecosite: g Plains rough fescue/Snowberry (mesic/rich)

Ecosite Phase: g1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
PRAIRIE ROSE *(Rosa arkansana)*	2	0-7	85
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	7	0-29	84
Forb			
COMMON YARROW *(Achillea millefolium)*	1	1-4	67
CREEPING WHITE PRAIRIE ASTER *(Aster falcatus)*	2	0-9	81
FIELD MOUSE-EAR CHICKWEED *(Cerastium arvense)*	1	0-9	72
HAREBELL *(Campanula rotundifolia)*	1	0-4	39
NORTHERN BEDSTRAW *(Galium boreale)*	1	0-5	39
PASTURE SAGEWORT *(Artemisia frigida)*	4	0-20	88
PRAIRIE CROCUS *(Anemone patens)*	1	0-5	45
PRAIRIE SAGEWORT *(Artemisia ludoviciana)*	1	0-8	66
SMOOTH ASTER *(Aster laevis)*	1	0-11	51
TUFTED FLEABANE *(Erigeron caespitosus)*	1	0-8	48
Grass			
BLUE GRAMA *(Bouteloua gracilis)*	3	0-20	42
BLUNT SEDGE *(Carex obtusata)*	1	0-6	72
HOOKER'S OAT GRASS *(Helictotrichon hookeri)*	1	0-6	54
JUNE GRASS *(Koeleria macrantha)*	4	0-26	78
KENTUCKY BLUEGRASS *(Poa pratensis)*	4	0-15	69
PLAINS ROUGH FESCUE *(Festuca hallii)*	45	4-80	100
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	3	0-14	94
SUN-LOVING SEDGE *(Carex pensylvanica)*	2	0-14	76
WESTERN PORCUPINE GRASS *(Stipa curtiseta)*	9	0-28	97
WESTERN WHEAT GRASS *(Agropyron smithii)*	1	0-15	42

Environmental Variables

Moisture Regime: SUBMESIC(), MESIC()

Nutrient Regime: PERMESOTROPHIC()

Elevation (range): (-) M

Slope: 3 - 5()

Aspect: Variable()

Soil Drainage: Well drained()

Soil Subgroup: O.BL

Soil Series:

Soil Correlation: SCA 4, SCA 7, SCA 9, SCA 10

Range Site Category: Lo

Ecological Status Score: 40

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb	50	25	100
Grass	1800	950	2300
Shrub			
Tree			
Total	1850	975	2400

Ecologically Sustainable Stocking Rate

1.15 (1.61-0.89) HA/AUM or *0.35 (0.25-0.45) AUM/AC*

CPA26. Plains rough fescue - Kentucky bluegrass

(Fescue hallii - Poa pratensis)

n=10 This is a mid seral grassland community found in mosaics with shrublands and deciduous forests. This grassland community is found throughout the Central Parkland and is associated with loamy dominated black chernozemic soils. This community arises under long term continuous grazing at moderate to high grazing rates and early season grazing. It is a persistent community which will remain indefinetly, possibly even after the grazing management has been changed. This community occupies the same niche that under grazing regimes with historically more rest, dormant season grazing, or lighter rates would be dominated by Plains rough fescue community (CPA25). Heavier grazing pressure will eliminate plains rough fescue from the site and push this plant community to a Kentucky bluegrass dominated type. This plant community occurs in the exclosure and grazed portions of Bell's Hill, Big Valley, Jake's Butte and well as the grazed portion of Bruce Range Reference Areas.

Natural Subregion: CENTRAL PARKLAND

Ecosite: g Plains rough fescue/Snowberry (mesic/rich)

Ecosite Phase: g1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
BASKET WILLOW *(Salix petiolaris)*	2	0-5	50
BEAKED WILLOW *(Salix bebbiana)*	2	0-5	40
PRAIRIE ROSE *(Rosa arkansana)*	2	0-5	90
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	7	1-17	100
Forb			
COMMON YARROW *(Achillea millefolium)*	3	0-6	80
CREEPING WHITE PRAIRIE ASTER *(Aster falcatus)*	3	0-11	70
FIELD MOUSE-EAR CHICKWEED *(Cerastium arvense)*	1	0-2	60
PASTURE SAGEWORT *(Artemisia frigida)*	3	0-10	70
PRAIRIE SAGEWORT *(Artemisia ludoviciana)*	2	0-6	70
SMALL-LEAVED EVERLASTING *(Antennaria parvifolia)*	1	0-6	40
Grass			
BLUNT SEDGE *(Carex obtusata)*	1	0-2	50
INTERMEDIATE OAT GRASS *(Danthonia intermedia)*	1	0-9	40
JUNE GRASS *(Koeleria macrantha)*	1	0-6	40
KENTUCKY BLUEGRASS *(Poa pratensis)*	24	14-39	100
PLAINS ROUGH FESCUE *(Festuca hallii)*	43	14-69	100
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	5	1-8	100
SUN-LOVING SEDGE *(Carex pensylvanica)*	1	0-2	50
WESTERN PORCUPINE GRASS *(Stipa curtiseta)*	4	0-18	80
WESTERN WHEAT GRASS *(Agropyron smithii)*	1	0-6	50

Environmental Variables

Moisture Regime: MESIC()

Nutrient Regime: OLIGOTROPHIC(), PERMESOTROPHIC(100)

Elevation (range): (-) M

Slope: 3 - 5(30), 6 - 9(30), 10 - 15(30), 16 - 30(10)

Aspect: Variable()

Soil Drainage: Rapidly drained(50), Well drained(50)

Soil Subgroup: O.BL

Soil Series:

Soil Correlation: SCA 7, SCA 9, SCA 10

Range Site Category: Lo

Ecological Status Score: 27

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb	150	100	200
Grass	1000	600	1200
Shrub			
Tree			
Total	1150	700	1400

Ecologically Sustainable Stocking Rate

1.34 (1.61-0.89) HA/AUM or *0.30 (0.25-0.45) AUM/AC*

CPA46. Kentucky bluegrass-Smooth brome

(Poa pratensis-Bromis inermis)

n=22 This community is described as a modified plant community found on Black Chernozemic soils which are either loamy, loamy sand or sandy loam. This community represents areas that have been previously cultivated (abandoned fields) that are at least fifty years old or have been heavily overgrazed. This community tends to be very productive early in the growing season or when regularly defoliated. However, due to heavy grazing pressures, litter tends to be limiting and is susceptible to weeds like Canada thistle. This community is found on various landforms however Kentucky bluegrass tends to be more dominant in uplands whereas smooth brome and snowberry are dominant in lower moist areas. The majority of this type is found in SCA7 but there are a few sites in SCA4. The soil series associated with the type in SCA4 are Wainwright (WWT) and Gloucher (GHC). The SCA7 soil series are dominantly; Elnora (EOR), Garry (GAR), Irma (IRM) and Rosebank (ROS). Minor soils are Alliance (ACE), Bellshill (BEL) and Amity (AMT).

Natural Subregion: CENTRAL PARKLAND

Ecosite: g Plains rough fescue/Snowberry (mesic/rich)

Ecosite Phase: g1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
COMMON WILD ROSE *(Rosa woodsii)*	3	0-14	73
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	5	0-16	86
Forb			
COMMON YARROW *(Achillea millefolium)*	1	0-2	59
GOLDEN ASTER *(Heterotheca villosa)*	2	0-9	50
GOLDEN BEAN *(Thermopsis rhombifolia)*	1	0-6	59
LOW GOLDENROD *(Solidago missouriensis)*	1	0-4	50
PASTURE SAGEWORT *(Artemisia frigida)*	3	0-12	59
PLAINS WORMWOOD *(Artemisia campestris)*	1	0-4	32
PRAIRIE SAGEWORT *(Artemisia ludoviciana)*	1	0-6	45
STIFF GOLDENROD *(Solidago rigida)*	1	0-4	32
UNDIFFERENTIATED EVERLASTINGS *(Antennaria)*	2	0-16	45
Grass			
AWNLESS BROME *(Bromus inermis)*	8	2-22	100
JUNE GRASS *(Koeleria macrantha)*	2	0-5	68
KENTUCKY BLUEGRASS *(Poa pratensis)*	8	1-19	100
ROCKY MOUNTAIN FESCUE *(Festuca saximontana)*	1	0-3	55
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	2	0-8	64
UNDIFFERENTIATED SEDGE *(Carex)*	3	0-8	95
WESTERN PORCUPINE GRASS *(Stipa curtiseta)*	1	0-3	45

Environmental Variables

Moisture Regime: SUBMESIC(), MESIC()

Nutrient Regime: MESOTROPHIC()

Elevation (range): 660(590-690) M

Slope: 0 - 0.5(), 0.5 - 2.5(), 3 - 5(), 6 - 9(), 10 - 15()

Aspect: Variable()

Soil Drainage: Well drained()

Soil Subgroup: O.DB, O.BL

Soil Series: EOR, IRM, ROS, WWT, ACE, AMT, BEL, GAR, GHC

Soil Correlation: SCA 4, SCA 7

Range Site Category: Lo, Sy

Ecological Status Score: 15

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	1409	897	2242
Total	1409.13	896.72	2241.8

Ecologically Sustainable Stocking Rate

1.34 (2.02-1.01) HA/AUM or *0.30 (0.20-0.40) AUM/AC*

Successional pathway: CPA25→ CPA26→ CP46

CPA25: Plains rough fescue

This is the reference plant community typically found on loamy black Chernozemic soils that have not been exposed to heavy grazing pressures.

CPA26: Plains rough fescue- Kentucky bluegrass

This is a mid seral community arising from long term continuous grazing at moderate to high grazing pressures or early season grazing. This has resulted in a shift from western porcupine in CPA25 to Kentucky bluegrass.

CPA46 Kentucky bluegrass- Smooth brome

This community is highly disturbed arising from long term continuous grazing at moderate to high rates or past cultivation. Plains rough fescue has been lost however western porcupine may return with changes of management practices. Recovery may be difficult due to smooth brome invasive properties.

CPA27. Kentucky bluegrass-Slender wheat grass

(Poa pratensis-Agropyron trachycaulum)

n=2 This plant community is a heavily disturbed grassland community found throughout the Central Parkland and is associated with loamy dominated black chernozemic soils. This community arises under long term continuous grazing at moderate to high grazing rates. The plains rough fescue and western porcupine grass have been grazed out of this community type. Plains rough fescue may not come back after grazing management changes but western porcupine grass may.

Natural Subregion: CENTRAL PARKLAND

Ecosite: g Plains rough fescue/Snowberry (mesic/rich)

Ecosite Phase: g1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
BASKET WILLOW *(Salix petiolaris)*	5	5-5	100
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	3	1-5	100
Forb			
CANADA GOLDENROD *(Solidago canadensis)*	2	2-3	100
CANADA THISTLE *(Cirsium arvense)*	3	0-5	100
COMMON YARROW *(Achillea millefolium)*	1	0-2	50
CREEPING WHITE PRAIRIE ASTER *(Aster falcatus)*	6	3-10	100
FIELD MOUSE-EAR CHICKWEED *(Cerastium arvense)*	2	0-3	100
FLODMAN'S THISTLE *(Cirsium flodmanii)*	1	1-1	100
PRAIRIE SAGEWORT *(Artemisia ludoviciana)*	3	0-5	50
SILVERWEED *(Potentilla anserina)*	1	0-2	50
SMALL-LEAVED EVERLASTING *(Antennaria parvifolia)*	13	6-20	100
SMOOTH PERENNIAL SOW-THISTLE *(Sonchus uliginosus)*	2	1-4	100
Grass			
JUNE GRASS *(Koeleria macrantha)*	4	2-6	100
KENTUCKY BLUEGRASS *(Poa pratensis)*	49	43-55	100
MAT MUHLY *(Muhlenbergia richardsonis)*	5	4-6	100
ROCKY MOUNTAIN FESCUE *(Festuca saximontana)*	2	2-2	100
SALT GRASS *(Distichlis stricta)*	1	0-2	50
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	7	7-7	100
UNDIFFERENTIATED SEDGE *(Carex)*	2	0-2	100
WESTERN WHEAT GRASS *(Agropyron smithii)*	1	0-2	50

Environmental Variables

Moisture Regime: MESIC()

Nutrient Regime: SUBMESOTROPHIC()

Elevation (range): (-) M

Slope: 3 - 5()

Aspect: Variable()

Soil Drainage: Well drained()

Soil Subgroup: O.BL

Soil Series:

Soil Correlation: SCA 7, SCA 9, SCA 10

Range Site Category: Lo

Ecological Status Score: 0

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb	200	100	400
Grass	850	650	1000
Shrub			
Tree			
Total	1050	750	1400

Ecologically Sustainable Stocking Rate

1.34 (1.61-0.89) HA/AUM or *0.30 (0.25-0.45) AUM/AC*

CPA3. Plains rough fescue-Western porcupine grass

(Festuca hallii-Stipa curtiseta)

n=48 Within the south eastern loamy areas of the Central Parkland (south of Wainwright) there is a mosaic of plant communities. The commonly identified ones are aspen forest, shrubland and grassland. This Plains rough fescue- Western Porcupine grass type is a reference plant community grassland community found on level and undulating areas. Where the landform is hummocky, rolling or otherwise hilly this type is found on the eastern and western aspects. In the southern portion of the Central Parkland, plains rough fescue communities are present on the north facing slopes. While at the north end of the parkland the north facing slopes have tree cover and rough fescue will be present to a greater degree on southerly aspects. This community has its' strongest expression on the loamy range sites. It will be present but with a reduced density of plains rough fescue on droughtier range sites. As growing season grazing pressure increases the influence of plains rough fescue declines. This plant community occurs on the Bruce Lake, Grizzly Bear Creek and Kitscoty Range Reference Areas (grazed and within exclosure). It also occurs within the exclosure of Setting Sun Range Reference Area.

Natural Subregion: CENTRAL PARKLAND

Ecosite: g Plains rough fescue/Snowberry (mesic/rich)

Ecosite Phase: g1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
SILVERBERRY *(Elaeagnus commutata)*	2	0-11	31
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	2	0-10	35
UNDIFFERENTIATED ROSE *(Rosa)*	3	0-10	69
Forb			
COMMON YARROW *(Achillea millefolium)*	1	0-10	50
GOLDEN ASTER *(Heterotheca villosa)*	1	0-4	33
GOLDEN BEAN *(Thermopsis rhombifolia)*	1	0-3	42
LOW GOLDENROD *(Solidago missouriensis)*	2	0-7	60
PASTURE SAGEWORT *(Artemisia frigida)*	5	0-23	90
PRAIRIE CROCUS *(Anemone patens)*	2	0-10	40
PRAIRIE SAGEWORT *(Artemisia ludoviciana)*	1	0-5	60
Grass			
HOOKER'S OAT GRASS *(Helictotrichon hookeri)*	2	0-11	52
JUNE GRASS *(Koeleria macrantha)*	2	0-9	60
PLAINS ROUGH FESCUE *(Festuca hallii)*	24	5-67	100
SAND GRASS *(Calamovilfa longifolia)*	1	0-4	33
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	2	0-10	58
UNDIFFERENTIATED SEDGE *(Carex)*	11	0-43	98
WESTERN PORCUPINE GRASS *(Stipa curtiseta)*	11	0-26	98

Environmental Variables

Moisture Regime: MESIC()

Nutrient Regime: MESOTROPHIC()

Elevation (range): 668(625-708) M

Slope: 0.5 - 2.5(), 3 - 5(), 6 - 9(), 10 - 15(), 16 - 30()

Aspect: Variable()

Soil Drainage: Very rapidly drained(), Rapidly drained(), Well drained(), Moderate well drain()

Soil Subgroup: O.DB, O.BL

Soil Series: CNN, CPL, EOR, HND, IRM, KNA, MET, NUT, PRO, SCD, WWT

Soil Correlation: SCA 4, SCA 7

Range Site Category: Gr, Li, Lo, Sa, Sv

Ecological Status Score: 40

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb	180	90	270
Grass	1820	1690	1950
Shrub	23		45
Tree			
Total	2023	1780	2265

Ecologically Sustainable Stocking Rate

1.15 (1.49-0.89) HA/AUM or *0.35 (0.27-0.45) AUM/AC*

CPA4. Upland sedge-Western wheat grass-Plains rough fescue

(Carex spp.-Agropyron smithii-Festuca hallii)

n=20 This type is a mid seral plant community and is present in a mix with shrub and aspen communities. These grasslands are associated with sites that are or have been moderately grazed. The most common grazing pattern is continuous grazing from late May to early October. This community will also persist with grazing regimes that involve a shorter grazing season of 2 -3 months in the spring or summer. This is quite a stable community that is tolerant of grazing. The most common soil textures are loam and clay loam.

Natural Subregion: CENTRAL PARKLAND

Ecosite: g Plains rough fescue/Snowberry (mesic/rich)

Ecosite Phase: g1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Forb			
COMMON YARROW *(Achillea millefolium)*	1	0-6	35
LOW GOLDENROD *(Solidago missouriensis)*	2	0-8	55
PASTURE SAGEWORT *(Artemisia frigida)*	10	0-23	95
PRAIRIE CROCUS *(Anemone patens)*	2	0-13	45
SMALL-LEAVED EVERLASTING *(Antennaria parvifolia)*	2	0-9	40
Grass			
BLUE GRAMA *(Bouteloua gracilis)*	3	0-12	60
HOOKER'S OAT GRASS *(Helictotrichon hookeri)*	1	0-8	35
JUNE GRASS *(Koeleria macrantha)*	6	0-19	90
NEEDLE-AND-THREAD *(Stipa comata)*	3	0-19	50
PLAINS ROUGH FESCUE *(Festuca hallii)*	4	0-14	55
UNDIFFERENTIATED BLUEGRASS *(Poa)*	1	0-5	30
UNDIFFERENTIATED SEDGE *(Carex)*	33	16-50	100
WESTERN PORCUPINE GRASS *(Stipa curtiseta)*	9	0-34	90
WESTERN WHEAT GRASS *(Agropyron smithii)*	11	6-23	100

Environmental Variables

Moisture Regime: MESIC()

Nutrient Regime: MESOTROPHIC()

Elevation (range): 680(640-730) M

Slope: 0.5 - 2.5(06), 3 - 5(33), 6 - 9(21), 10 - 15(24), 16 - 30(06)

Aspect: Variable()

Soil Drainage: Rapidly drained(), Well drained()

Soil Subgroup: O.DB

Soil Series: CNN, DCY, HCH, HND, MET, NUT, WWT

Soil Correlation: SCA 4, SCA 7

Range Site Category: Li, Lo, Sa, Sy

Ecological Status Score: 27

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb	270	90	450
Grass	1100	800	1400
Shrub			
Tree			
Total	1370	890	1850

Ecologically Sustainable Stocking Rate

1.34 (2.24-1.15) HA/AUM or *0.30 (0.18-0.35) AUM/AC*

At stocking rates of greater than .4 AUM/ac there will be a loss of litter, and Bluegrass becomes more evident. At stocking rates of less than .25 AUM/ac a build up of litter occurs and Plains rough Fescue is more prevalent.

CPA5. Upland sedge-Kentucky bluegrass

(Carex-Poa pratensis)

n=11 This grassland is a early seral plant community and is associated with primarily sandy loam soils, though it is present on loam and loamy sand soils as well. The grasses and forbs of this type can also be found with an open shrub cover. This community arises under long term continuous grazing at moderate to high grazing rates. It is a persistent community which will remain indefinitely after the grazing management has been changed. This grassland is usually part of the parkland mosaic. It occupies the niche that under grazing regimes with historically more rest or lighter rates would be dominated by rough fescue and/or western porcupine grass. Similar variations of this type can be found on sites of abandoned cultivation or sites which had been seeded to tame grass a long time ago, i.e. 30+ years. This plant community occurs within the exclosures of the Alliance and Lea Park as well as the grazed portion within Windy Lake Range Reference Area.

Natural Subregion: CENTRAL PARKLAND

Ecosite: g Plains rough fescue/Snowberry (mesic/rich)

Ecosite Phase: g1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
PRAIRIE ROSE *(Rosa arkansana)*	1	0-4	36
Forb			
COMMON YARROW *(Achillea millefolium)*	3	0-13	36
FIELD MOUSE-EAR CHICKWEED *(Cerastium arvense)*	1	0-3	36
GOLDEN BEAN *(Thermopsis rhombifolia)*	2	0-7	45
LOW GOLDENROD *(Solidago missouriensis)*	2	0-8	73
PASTURE SAGEWORT *(Artemisia frigida)*	3	0-8	91
PRAIRIE SAGEWORT *(Artemisia ludoviciana)*	3	0-9	64
SMALL-LEAVED EVERLASTING *(Antennaria parvifolia)*	1	0-6	36
Grass			
BLUE GRAMA *(Bouteloua gracilis)*	1	0-4	55
JUNE GRASS *(Koeleria macrantha)*	2	0-5	73
PLAINS ROUGH FESCUE *(Festuca hallii)*	2	0-13	36
SAND GRASS *(Calamovilfa longifolia)*	2	0-8	36
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	1	0-5	36
UNDIFFERENTIATED BLUEGRASS *(Poa)*	27	9-69	100
UNDIFFERENTIATED SEDGE *(Carex)*	28	6-54	100
WESTERN PORCUPINE GRASS *(Stipa curtiseta)*	4	1-10	82
WESTERN WHEAT GRASS *(Agropyron smithii)*	2	0-8	36

Environmental Variables

Moisture Regime: MESIC()

Nutrient Regime: HYPEREUTROPHIC()

Elevation (range): 670(640-730) M

Slope: 3 - 5(60), 6 - 9(20), 10 - 15(10), 16 - 30(10)

Aspect:

Soil Drainage: Very rapidly drained(20), Rapidly drained(80)

Soil Subgroup: O.DB

Soil Series: DCY, HND, MET, SCD, WWT

Soil Correlation: SCA 4, SCA 7, SCA 9, SCA 10

Range Site Category: Gr, Lo, Sa, Sy

Ecological Status Score: 15

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass	1100	800	1400
Shrub			
Tree			
Total	1100	800	1400

Ecologically Sustainable Stocking Rate

1.39 (1.50-1.15) HA/AUM or *0.29 (0.27-0.35) AUM/AC*

Under normal or wet conditions this is a productive community for grazing. Drought stress quickly stops growth and in dry years the total production is much reduced.

Successional pathway: CPA3→ CPA4→ CPA5

CPA3: Plains rough fescue- Upland sedge

This is the reference plant community in areas of hummocky, rolling, and hilly landscapes and found on the eastern, western, northern aspects and on level mesic sites. This community tends to be present in areas of reduced density of plains rough fescue due to drier moisture conditions.

CPA4: Upland sedge- Western wheat grass- Plains rough fescue

This community arises with an increase in grazing pressure from the CPA3 during early season grazing resulting in fescue to be decreased. This community can be quite tolerant of grazing and particularly evident on clay loam and loamy soils.

CPA5: Upland sedge- Kentucky bluegrass

This community arises under long term continuous grazing at moderate and high rates resulting in Kentucky bluegrass to invade and take over native species.

9.7.2 Plains rough fescue/ Snowberry (mesic/ rich): Shrubland

Characteristic Species:

Shrub: Snowberry, Prairie rose, Silverberry
Grass: Plains rough fescue, Sedge, Western porcupine grass
Forb: Creeping white prairie aster

Community Types:

CPC29: Snowberry/ Plains rough fescue (10)
CPC30: Snowberry/ Plains rough fescue- Kentucky bluegrass (3)
CPC32: Snowberry/ Kentucky bluegrass (7)
CPC23: Snowberry/ Smooth brome (12)
CPC5: Snowberry- Silverberry/ Plains rough fescue- Western porcupine grass (32)
CPC6: Snowberry- Silverberry/ Kentucky bluegrass (13)
CPC31: Silverberry/ Plains rough fescue- Prairie Sedge (1)

CPC29. Snowberry/Plains rough fescue

(Symphoricarpus occidentalis/Festuca hallii)

n=10 Within the Central Parkland there is a mosaic of plant communities. The commonly identifiable ones are aspen forest, shrubland and grassland. This Snowberry/ Plains rough fescue type is a reference shrubland community for the Central Parkland Natural Subregion. Where the landform is hummocky, rolling or otherwise hilly this plant community can be found on all aspects but generally southeast and at upper to mid slope locations. The Snowberry/ Plains rough fescue community is found of loamy soils, as grazing intensity increases the presence of Kentucky bluegrass will increase.

Natural Subregion: CENTRAL PARKLAND

Ecosite: g Plains rough fescue/Snowberry (mesic/rich)

Ecosite Phase: g2 shrubland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
BEAKED WILLOW *(Salix bebbiana)*	1	0-6	30
PRAIRIE ROSE *(Rosa arkansana)*	3	1-12	100
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	22	13-29	100
Forb			
CREEPING WHITE PRAIRIE ASTER *(Aster falcatus)*	2	0-8	70
FIELD MOUSE-EAR CHICKWEED *(Cerastium arvense)*	1	0-1	50
PASTURE SAGEWORT *(Artemisia frigida)*	2	0-4	70
PRAIRIE SAGEWORT *(Artemisia ludoviciana)*	1	0-4	40
SMOOTH ASTER *(Aster laevis)*	2	0-6	60
Grass			
BLUE GRAMA *(Bouteloua gracilis)*	2	0-8	40
HAREBELL *(Campanula rotundifolia)*	1	0-2	40
JUNE GRASS *(Koeleria macrantha)*	1	0-10	40
KENTUCKY BLUEGRASS *(Poa pratensis)*	2	0-8	50
PLAINS MUHLY *(Muhlenbergia cuspidata)*	1	0-3	30
PLAINS ROUGH FESCUE *(Festuca hallii)*	38	14-64	100
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	6	3-10	100
SUN-LOVING SEDGE *(Carex pensylvanica)*	7	0-30	60
WESTERN PORCUPINE GRASS *(Stipa curtiseta)*	11	0-23	90

Environmental Variables

Moisture Regime: SUBMESIC(30), MESIC(70)

Nutrient Regime: MESOTROPHIC(30), PERMESOTROPHIC(70)

Elevation (range): (-) M

Slope: 0 - 0.5(25), 3 - 5(25), 6 - 9(25), 10 - 15(25)

Aspect: Northerly(50), Easterly(30), Westerly(20)

Soil Drainage: Rapidly drained(30), Well drained(30), Moderate well drain(40)

Soil Subgroup: O.DB, O.BL

Soil Series:

Soil Correlation: SCA 4, SCA 7

Range Site Category: Lo

Ecological Status Score: 40

Soil Exposure

	Mean	**Min**	**Max**
%:	3	0	10

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

1.61 (2.69-1.15) HA/AUM or *0.25 (0.15-0.35) AUM/AC*

CPC30. Snowberry/Plains rough fescue-Kentucky bluegrass

(Symphoricarpus occidentalis/Festuca hallii-Poa pratensis)

n=3 Within the Central Parkland there is a mosaic of plant communities. The commonly identifiable ones are aspen forest, shrubland and grassland. This Snowberry/ Plains rough fescue- Kentucky bluegrass is successional grazing shrubland community for the Central Parkland Natural Subregion. Where the landform is hummocky, rolling or otherwise hilly this plant community can be found on all aspects but generally southeast and at upper to mid slope locations. The Snowberry/ Plains rough fescue- Kentucky bluegrass community is found of loamy soils, and is a result of moderate grazing intensity which decreased the presence of plains rough fescue. This plant community occurs within the exclosures of the Battle River and Clandonald Range Reference Area.

Natural Subregion: CENTRAL PARKLAND

Ecosite: g Plains rough fescue/Snowberry (mesic/rich)

Ecosite Phase: g2 shrubland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
PRAIRIE ROSE *(Rosa arkansana)*	1	1-1	100
SILVERBERRY *(Elaeagnus commutata)*	2	0-7	33
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	28	20-34	100
Forb			
COMMON YARROW *(Achillea millefolium)*	2	1-2	100
CREEPING WHITE PRAIRIE ASTER *(Aster falcatus)*	3	2-5	100
GOLDEN BEAN *(Thermopsis rhombifolia)*	1	0-3	33
NORTHERN BEDSTRAW *(Galium boreale)*	1	0-2	67
PRAIRIE SAGEWORT *(Artemisia ludoviciana)*	2	0-3	67
SMALL-LEAVED EVERLASTING *(Antennaria parvifolia)*	2	0-4	33
SMOOTH ASTER *(Aster laevis)*	1	0-5	67
Grass			
AWNLESS BROME *(Bromus inermis)*	8	0-16	67
JUNE GRASS *(Koeleria macrantha)*	1	0-1	67
KENTUCKY BLUEGRASS *(Poa pratensis)*	18	14-26	100
NODDING BROME *(Bromus anomalus)*	1	1-2	100
PLAINS ROUGH FESCUE *(Festuca hallii)*	25	4-41	100
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	7	3-12	100
SUN-LOVING SEDGE *(Carex pensylvanica)*	2	1-5	100
WESTERN PORCUPINE GRASS *(Stipa curtiseta)*	9	4-14	100

Environmental Variables

Moisture Regime: SUBMESIC(30), MESIC(70)

Nutrient Regime: MESOTROPHIC(30), PERMESOTROPHIC(70)

Elevation (range): (-) M

Slope: 0 - 0.5(25), 3 - 5(25), 6 - 9(25), 10 - 15(25)

Aspect: Variable()

Soil Drainage: Well drained()

Soil Subgroup: O.DB, O.BL

Soil Series:

Soil Correlation: SCA 4, SCA 7

Range Site Category: Lo

Ecological Status Score: 15

Soil Exposure	**Mean**	**Min**	**Max**
%:	1	0	4

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

1.61 (2.69-1.15) HA/AUM or *0.25 (0.15-0.35) AUM/AC*

CPC32. Snowberry/Kentucky bluegrass

(Symphoricarpos occidentalis/Poa pratensis)

n=7 This plant community is typical throughout the Central Parkland Natural Subregion and has been modified by grazing. Sites found in mesic areas result in an increase in snowberry, making favourable conditions for Kentucky bluegrass. These sites were particularly sampled south of Wainwright. This community type is usually the result of moderate to heavy grazing pressure, early season grazing pressure or continuous growing season long grazing.

Natural Subregion: CENTRAL PARKLAND

Ecosite: g Plains rough fescue/Snowberry (mesic/rich)

Ecosite Phase: g2 shrubland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
COMMON WILD ROSE *(Rosa woodsii)*	5	0-13	86
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	28	15-39	100
Forb			
COMMON YARROW *(Achillea millefolium)*	1	0-2	57
GOLDEN BEAN *(Thermopsis rhombifolia)*	2	0-7	43
LOW GOLDENROD *(Solidago missouriensis)*	1	0-5	71
NORTHERN BEDSTRAW *(Galium boreale)*	1	0-5	43
PASTURE SAGEWORT *(Artemisia frigida)*	2	0-6	57
PRAIRIE SAGEWORT *(Artemisia ludoviciana)*	1	0-2	57
Grass			
JUNE GRASS *(Koeleria macrantha)*	1	0-2	57
KENTUCKY BLUEGRASS *(Poa pratensis)*	18	11-23	100
NEEDLE-AND-THREAD *(Stipa comata)*	1	0-5	43
PLAINS ROUGH FESCUE *(Festuca hallii)*	1	0-4	57
SAND GRASS *(Calamovilfa longifolia)*	1	0-7	43
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	3	0-5	71
UNDIFFERENTIATED SEDGE *(Carex)*	7	2-12	100

Environmental Variables

Moisture Regime: MESIC()

Nutrient Regime: MESOTROPHIC()

Elevation (range): 667(605-671) M

Slope: 0.5 - 2.5(), 6 - 9(), 10 - 15()

Aspect: Variable()

Soil Drainage: Well drained()

Soil Subgroup: O.DB, O.BL

Soil Series: CNN, EOR, HND, IRM, ROS, ACE, BEL, BLL

Soil Correlation: SCA 4, SCA 7

Range Site Category: Cl, Lo, Sy

Ecological Status Score: 0

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	1569	1345	2018
Total	1569.26	1345.08	2017.62

Ecologically Sustainable Stocking Rate

1.34 (2.02-1.01) HA/AUM or *0.30 (0.20-0.40) AUM/AC*

CPC23. Snowberry/Smooth brome

(Symphoricarpos occidentalis-Bromus inermis)

n=12 This community is dominantly found in SCA7. When it is found in SCA4 it is usually associated with sites that have influence of increased moisture such as slight subirrigation resulting in gleyed soils, such as soil series Gloucher (GHC) or Gat Lake (GAT). In SCA7 the soil series associated with this community include; Amity (AMT), Bellshill (BEL), Peregrine (PGE), Hanson (HSN) and Kerensky (KSY). They are medium textured soils Orthic Black Chernozemic soils, or soils with a gleyed influence indicating slightly extra moisture. Dominant soil textures are; silty loam, sandy loam, fine sandy loam, loam and loamy sand. Ten of the 12 sites shown for this community are associated with the Battle River floodplain. This community has significant smooth brome on a long term basis, in part this is sustained by relatively later turn in dates for grazing. Grazing starting in mid July or later has encouraged the establishment of smooth brome.

Natural Subregion: CENTRAL PARKLAND

Ecosite: g Plains rough fescue/Snowberry (mesic/rich)

Ecosite Phase: g2 shrubland

Plant Composition	Canopy Cover (%)		
	Mean	Range	Const.
Shrub			
CHOKE CHERRY *(Prunus virginiana)*	5	0-19	75
COMMON WILD ROSE *(Rosa woodsii)*	5	0-16	92
NARROW-LEAVED MEADOWSWEET *(Spiraea alba)*	1	0-6	42
SASKATOON *(Amelanchier alnifolia)*	1	0-6	42
SILVERBERRY *(Elaeagnus commutata)*	4	0-9	50
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	23	10-29	100
Forb			
CANADA ANEMONE *(Anemone canadensis)*	3	0-7	67
FRINGED LOOSESTRIFE *(Lysimachia ciliata)*	1	0-2	42
NORTHERN BEDSTRAW *(Galium boreale)*	2	0-6	92
STAR-FLOWERED SOLOMON'S-SEAL *(Smilacina stellata)*	1	0-2	42
UNDIFFERENTIATED GOLDENROD *(Solidago)*	2	0-9	58
VEINY MEADOW RUE *(Thalictrum venulosum)*	3	0-7	83
WILD VETCH *(Vicia americana)*	1	0-3	92
Grass			
AWNLESS BROME *(Bromus inermis)*	10	3-17	100
KENTUCKY BLUEGRASS *(Poa pratensis)*	3	0-7	83
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	1	0-4	75
UNDIFFERENTIATED SEDGE *(Carex)*	7	1-15	100

Environmental Variables

Moisture Regime: MESIC()

Nutrient Regime: MESOTROPHIC()

Elevation (range): 603(585-660) M

Slope: 0.5 - 2.5(), 6 - 9(), 10 - 15()

Aspect: Variable()

Soil Drainage: Well drained()

Soil Subgroup: O.B

Soil Series: KSY, AMT, BEL, PGE, GHC, GAT, HSN

Soil Correlation: SCA 4, SCA 7

Range Site Category: Lo, Sb

Ecological Status Score: 15

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	1984	1681	2242
Total	1984	1681.35	2241.8

Ecologically Sustainable Stocking Rate

1.34 (2.02-1.01) HA/AUM or *0.30 (0.20-0.40) AUM/AC*

Successional pathway: CPC29→ CPC30→ CPC32→ CPC23

CPC29:Snowberry/ Plains rough fescue- Western porcupine grass

This is the reference shrubland community, commonly found in areas of hummocky, rolling or hilly terrain on all aspects on loamy soils. As grazing pressure increases, non- native species can invade.

CPC30:Snowberry/ Plains rough fescue-Kentucky bluegrass

This community represents the reference community which has been modified due to heavier grazing pressures or early season grazing resulting in decreased amounts of rough fescue and greater Kentucky bluegrass. It is found on all aspects.

CPC32:Snowberry/ Kentucky bluegrass

Heavy grazing pressures, long term continuous grazing or early season grazing has modified the community in which plains rough fescue is eliminated.

CPC23:Snowberry/ Smooth brome

Mid summer grazing (mid July or later) has encouraged the establishment of smooth brome.

CPC5. Snowberry-Silverberry/Rough fescue-Western porcupine grass

(Symphoricarpos occidentalis-Elaeagnus commutata/Festuca hallii-Stipa curtiseta)

n=32 This community type represents the transition from grassland to forest. Snowberry and rose will invade into the grassland from the edges of small aspen clones. If moisture conditions are favourable these sites will often become dominated by aspen to form an aspen/snowberry dominated community type. In the Wainwright sand dunes this successional sequence will occur on northerly aspects where soil moisture conditions are favourable. In contrast on loamy soils near Kinsella this successional sequence occurs on westerly and southerly aspects. These community types are very productive because of the favourable moisture conditions, but as succession occurs to an aspen forest many of the palatable grass and forbs are lost.

Natural Subregion: CENTRAL PARKLAND

Ecosite: g Plains rough fescue/Snowberry (mesic/rich)

Ecosite Phase: g2 shrubland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
CHOKE CHERRY *(Prunus virginiana)*	1	0-5	38
SILVERBERRY *(Elaeagnus commutata)*	9	2-20	100
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	7	0-31	88
UNDIFFERENTIATED ROSE *(Rosa)*	7	0-15	97
Forb			
COMMON YARROW *(Achillea millefolium)*	1	0-3	63
FIELD MOUSE-EAR CHICKWEED *(Cerastium arvense)*	1	0-6	63
GOLDEN BEAN *(Thermopsis rhombifolia)*	1	0-4	59
LOW GOLDENROD *(Solidago missouriensis)*	2	0-5	84
NORTHERN BEDSTRAW *(Galium boreale)*	1	0-3	50
PASTURE SAGEWORT *(Artemisia frigida)*	4	0-16	94
PRAIRIE SAGEWORT *(Artemisia ludoviciana)*	2	0-9	88
Grass			
JUNE GRASS *(Koeleria macrantha)*	2	0-6	84
KENTUCKY BLUEGRASS *(Poa pratensis)*	2	0-13	63
NEEDLE-AND-THREAD *(Stipa comata)*	2	0-19	38
PLAINS ROUGH FESCUE *(Festuca hallii)*	11	3-26	100
SAND GRASS *(Calamovilfa longifolia)*	2	0-7	63
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	3	0-8	82
UNDIFFERENTIATED SEDGE *(Carex)*	6	1-13	100
WESTERN PORCUPINE GRASS *(Stipa curtiseta)*	8	1-27	100

Environmental Variables

Moisture Regime: MESIC()

Nutrient Regime: PERMESOTROPHIC()

Elevation (range): 680(669-702) M

Slope: 3 - 5(), 6 - 9(), 10 - 15(), 16 - 30()

Aspect: Northerly(), Southerly(), Westerly(), Variable()

Soil Drainage: Moderate well drain()

Soil Subgroup: O.DB, O.BL

Soil Series: DCY, IRM, MET, RED, WWT

Soil Correlation: SCA 4, SCA 7

Range Site Category: Lo, Sy

Ecological Status Score: 40

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	1501	1233	2018
Total	1500.56	1232.99	2017.62

Ecologically Sustainable Stocking Rate

1.61 (2.50-1.15) HA/AUM or *0.25 (0.16-0.35) AUM/AC*

CPC6. Snowberry-Silverberry/Kentucky bluegrass

(Symphoricarpos occidentalis-Elaeagnus commutata/Poa pratensis)

n=13 This community type has similar moisture and nutrient conditions to the previously described snowberry, plains rough fescue dominated community type (CPC5) and is generally more moist than the previously described silverberry, choke cherry dominated community (CPC1). The presence of plains rough fescue in this community type indicates that the understory of this community type was likely dominated by plains rough fescue, but heavy grazing pressure on the site has favoured the growth of Kentucky bluegrass. Smooth brome can be present in this community and it has likey invaded off the road allowance adjacent. This community type is very productive because of the favourable moisture conditions, but as succession occurs to an aspen forest many of the palatable grass and forbs are often lost. This community will likely succeed to an Aspen/Snowberry/Smooth brome- Kentucky bluegrass (CPD4) community.

Natural Subregion: CENTRAL PARKLAND

Ecosite: g Plains rough fescue/Snowberry (mesic/rich)

Ecosite Phase: g2 shrubland

Plant Composition	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
COMMON WILD ROSE *(Rosa woodsii)*	7	0-13	92
SILVERBERRY *(Elaeagnus commutata)*	10	0-30	100
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	10	5-20	100
Forb			
COMMON YARROW *(Achillea millefolium)*	1	0-4	77
FIELD MOUSE-EAR CHICKWEED *(Cerastium arvense)*	1	0-4	54
GOLDEN BEAN *(Thermopsis rhombifolia)*	1	0-4	46
LOW GOLDENROD *(Solidago missouriensis)*	2	0-6	85
PASTURE SAGEWORT *(Artemisia frigida)*	4	0-12	85
PRAIRIE SAGEWORT *(Artemisia ludoviciana)*	2	0-8	85
Grass			
AWNLESS BROME *(Bromus inermis)*	4	0-32	54
JUNE GRASS *(Koeleria macrantha)*	2	0-4	69
KENTUCKY BLUEGRASS *(Poa pratensis)*	18	4-52	100
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	1	0-6	54
UNDIFFERENTIATED SEDGE *(Carex)*	10	3-29	100
WESTERN PORCUPINE GRASS *(Stipa curtiseta)*	3	0-8	77
WESTERN WHEAT GRASS *(Agropyron smithii)*	1	0-5	38

Environmental Variables

Moisture Regime: MESIC()

Nutrient Regime: PERMESOTROPHIC()

Elevation (range): 674(659-699) M

Slope: 0.5 - 2.5(), 3 - 5(), 6 - 9(), 10 - 15()

Aspect: Northerly()

Soil Drainage: Well drained()

Soil Subgroup: O.DB, O.BL

Soil Series: DCY, IRM, MET, RED, WWT

Soil Correlation: SCA 4, SCA 7

Range Site Category: Lo, Sy

Ecological Status Score: 15

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	1433	897	1793
Total	1433.16	896.72	1793.44

Ecologically Sustainable Stocking Rate

1.61 (2.50-1.15) HA/AUM or *0.25 (0.16-0.35) AUM/AC*

CPC31. Silverberry/Plains rough fescue-Prairie sedge

(Elaeagnus commutata/Festuca hallii-Carex prairea)

n=1 This community type was described in the orthic dark brown soils (loamy) for the Rumsey area (Wheatley & Bentz). It occupies the middle position of mesic to submesic slopes, and is found in areas that are moderately to well drained with northern aspects. The understory has plains rough fescue, carex and western porcupine grass. This site is utilized by livestock and should be considered primary range.

Natural Subregion: CENTRAL PARKLAND

Ecosite: g Plains rough fescue/Snowberry (mesic/rich)

Ecosite Phase: g2 shrubland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
BEAKED WILLOW *(Salix bebbiana)*	5	5-5	100
PRAIRIE ROSE *(Rosa arkansana)*	12	12-12	100
SILVERBERRY *(Elaeagnus commutata)*	20	20-20	100
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	13	13-13	100
Forb			
AGRIMONY *(Agrimonia striata)*	1	1-1	100
COMMON YARROW *(Achillea millefolium)*	1	1-1	100
CREEPING WHITE PRAIRIE ASTER *(Aster falcatus)*	1	1-1	100
GOLDEN BEAN *(Thermopsis rhombifolia)*	1	1-1	100
LARGE-LEAVED YELLOW AVENS *(Geum macrophyllum)*	3	3-3	100
MOUNTAIN GOLDENROD *(Solidago spathulata)*	3	3-3	100
SMOOTH ASTER *(Aster laevis)*	3	3-3	100
Grass			
INLAND BLUEGRASS *(Poa interior)*	3	3-3	100
KENTUCKY BLUEGRASS *(Poa pratensis)*	3	3-3	100
PLAINS ROUGH FESCUE *(Festuca hallii)*	20	20-20	100
PRAIRIE SEDGE *(Carex prairea)*	19	19-19	100
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	10	10-10	100
WESTERN PORCUPINE GRASS *(Stipa curtiseta)*	11	11-11	100

Environmental Variables

Moisture Regime: SUBMESIC()

Nutrient Regime: PERMESOTROPHIC()

Elevation (range): (-) M

Slope: 3 - 5(50), 6 - 9(50)

Aspect: Northerly()

Soil Drainage: Well drained(50), Moderate well drain(50)

Soil Subgroup: O.DB

Soil Series:

Soil Correlation: SCA 4, SCA 7

Range Site Category: Lo

Ecological Status Score: 40

Soil Exposure	**Mean**	**Min**	**Max**
%:	3	3	3

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

1.34 (2.02-1.01) HA/AUM or *0.30 (0.20-0.40) AUM/AC*

9.7.3 Plains rough fescue/ Snowberry (mesic/ rich): Deciduous

Characteristic Species:

Tree: Aspen
Shrub: Snowberry, Rose, Saskatoon, Beaked Willow
Grass: Smooth brome, Kentucky bluegrass, Hay sedge
Forb: Northern bedstraw

Community Types:

CPD13: Aspen/ Snowberry- Rose (13)
CPD4: Aspen/ Snowberry- Smooth brome- Kentucky bluegrass (6)
CPD18: Snowberry/ Aspen (15)
CPD28: Aspen/ Snowberry/ Awned wheat grass (5)
CPD14: Aspen/Beaked hazelnut (3)

CPD13. Aspen/Snowberry-Rose

(Populus tremuloides/Symphoricarpos occidentalis-Rosa acicularis)

n=13 This plant community is the most successionally advanced plant community type found throughout the Central Parkland on loamy mesic sites. A shift of CPD4 (Aspen/ Snowberry/ Smooth brome- Kentucky bluegrass) will occur with heavy grazing resulting in an increase in Kentucky blue grass or an increase invasion of smooth brome. Repeated burning will reduce the cover of aspen and shrub species and the community will resemble a Snowberry/ Aspen (CPD18) community type. The dominant sedge in this community is hay sedge. Majority of these sites were found in the Wainwright area, however this plant community can be found in the Rumsey area as well.

Natural Subregion: CENTRAL PARKLAND

Ecosite: g Plains rough fescue/Snowberry (mesic/rich)

Ecosite Phase: g3 deciduous

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Tree			
ASPEN *(Populus tremuloides)*	43	15-60	100
Shrub			
ASPEN *(Populus tremuloides)*	4	0-23	46
CHOKE CHERRY *(Prunus virginiana)*	3	0-7	77
SASKATOON *(Amelanchier alnifolia)*	2	0-6	54
SNOWBERRY *(Symphoricarpos albus)*	9	0-32	54
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	21	0-70	54
UNDIFFERENTIATED ROSE *(Rosa)*	12	0-39	85
WILD RED RASPBERRY *(Rubus idaeus)*	1	0-5	38
Forb			
COMMON DANDELION *(Taraxacum officinale)*	1	0-2	46
CREAM-COLORED VETCHLING *(Lathyrus ochroleucus)*	1	0-9	54
NORTHERN BEDSTRAW *(Galium boreale)*	3	0-12	92
STAR-FLOWERED SOLOMON'S-SEAL *(Smilacina stellata)*	1	0-7	54
VEINY MEADOW RUE *(Thalictrum venulosum)*	1	0-4	31
WILD STRAWBERRY *(Fragaria virginiana)*	1	0-2	38
Grass			
AWNLESS BROME *(Bromus inermis)*	1	0-3	46
KENTUCKY BLUEGRASS *(Poa pratensis)*	4	0-14	77
PLAINS ROUGH FESCUE *(Festuca hallii)*	1	0-4	46
PURPLE OAT GRASS *(Schizachne purpurascens)*	2	0-8	54
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	3	0-10	92
UNDIFFERENTIATED SEDGE *(Carex)*	7	1-13	100

Environmental Variables

Moisture Regime: MESIC(100)

Nutrient Regime: MESOTROPHIC(100)

Elevation (range): 691(661-840) M

Slope: 0.5 - 2.5(), 3 - 5(), 6 - 9(), 10 - 15()

Aspect: Variable(100)

Soil Drainage: Well drained(100)

Soil Subgroup: O.DB, O.BL

Soil Series: CNN, EOR, HND, IRM, ROS, ACE, BEL, BLL

Soil Correlation: SCA 4, SCA 7

Range Site Category: Lo, Sy, Cl

Ecological Status Score: 25

LFH Statistics (cm)	**Mean**	**Min**	**Max**
Thickness (cm):	7.00	2.00	10.00
Litter:			

Soil Exposure	**Mean**	**Min**	**Max**
%:	0		
Comment:			

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb	250		
Grass	150		
Shrub	550		
Tree			
Undifferentiated	399	112	676
Total	1349.32	112.09	675.54

Ecologically Sustainable Stocking Rate

2.02 (2.69-1.15) HA/AUM or *0.20 (0.15-0.35) AUM/AC*

CPD4. Aspen/Snowberry/Smooth brome-Kentucky bluegrass

(Populus tremuloides/Symphoricarpos occidentalis/Bromus inermis-Poa pratensis)

n=6 This community type represents an Aspen/ Snowberry- Rose (CPD13) community that has been invaded by smooth brome. Smooth brome is an introduced grass which is highly invasive and can invade into ungrazed areas where higher moisture is present. These sites have been observed in areas of aspen dieback with the understory opening up and being heavily dominated by smooth brome. The invasion of non-native invaders onto the site makes this community very productive for domestic livestock. Hay sedge is the dominant sedge present.

Natural Subregion: CENTRAL PARKLAND

Ecosite: g Plains rough fescue/Snowberry (mesic/rich)

Ecosite Phase: g3 deciduous

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Tree			
ASPEN *(Populus tremuloides)*	44	41-60	100
Shrub			
CHOKE CHERRY *(Prunus virginiana)*	2	1-5	100
NORTHERN GOOSEBERRY *(Ribes oxyacanthoides)*	1	0-5	67
RED-OSIER DOGWOOD *(Cornus stolonifera)*	2	0-10	50
SASKATOON *(Amelanchier alnifolia)*	3	0-10	83
SNOWBERRY *(Symphoricarpos albus)*	14	7-23	100
UNDIFFERENTIATED ROSE *(Rosa)*	6	3-11	100
WILD RED RASPBERRY *(Rubus idaeus)*	7	0-25	67
Forb			
COMMON DANDELION *(Taraxacum officinale)*	1	0-1	50
COMMON PINK WINTERGREEN *(Pyrola asarifolia)*	1	0-2	50
CREAM-COLORED VETCHLING *(Lathyrus ochroleucus)*	1	0-4	83
NORTHERN BEDSTRAW *(Galium boreale)*	2	0-5	83
STAR-FLOWERED SOLOMON'S-SEAL *(Smilacina stellata)*	1	0-2	83
TWINING HONEYSUCKLE *(Lonicera dioica)*	1	0-3	50
VEINY MEADOW RUE *(Thalictrum venulosum)*	1	0-3	67
Grass			
AWNLESS BROME *(Bromus inermis)*	9	1-17	83
KENTUCKY BLUEGRASS *(Poa pratensis)*	9	0-15	83
PURPLE OAT GRASS *(Schizachne purpurascens)*	2	0-8	50
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	1	0-3	50
UNDIFFERENTIATED SEDGE *(Carex)*	5	1-9	100

Environmental Variables

Moisture Regime: SUBMESIC()

Nutrient Regime: MESOTROPHIC()

Elevation (range): 707(660-723) M

Slope: 6 - 9()

Aspect: Northerly()

Soil Drainage: Well drained()

Soil Subgroup: O.DB, O.BL

Soil Series: CNN, EOR, HND, IRM, ROS, ACE, BEL, BLL

Soil Correlation: SCA 4, SCA 7

Range Site Category: Cl, Lo, Sy

Ecological Status Score: 10

LFH Statistics (cm)	Mean	Min	Max
Thickness (cm):	5.00		
Litter:			

Soil Exposure	Mean	Min	Max
%:			
Comment:			

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	18		
Grass	504		
Shrub	246		
Tree			
Undifferentiated	869	224	1569
Total	1636.7	224.18	1569.26

Ecologically Sustainable Stocking Rate

1.61 (2.69-1.15) HA/AUM or *0.25 (0.15-0.35) AUM/AC*

CPD18. Snowberry/Aspen

(Symphoricarpos occidentalis/Populus tremuloides)

n=15 This plant community represents the fire disturbance on a Aspen/ Snowberry (CPD13 or CPD4) dominated community type or recent invasion of aspen and snowberry onto grassland dominated community types. The low cover of aspen distinguishes this community type from the reference plant community. This community type is also very similiar to the Choke cherry- Snowberry-Saskatoon/ Aspen (CPD17) type described on the Canadian Forces Base Wainwright but the cover of choke cherry and saskatoon are lower and when these species are present snowberry will dominate the understory. The thick cover of snowberry limits the amount of production and this community is often non-use.

Natural Subregion: CENTRAL PARKLAND

Ecosite: g Plains rough fescue/Snowberry (mesic/rich)

Ecosite Phase: g3 deciduous

Plant Composition	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Tree			
ASPEN *(Populus tremuloides)*	31	8-87	100
Shrub			
CHOKE CHERRY *(Prunus virginiana)*	4	0-15	73
SASKATOON *(Amelanchier alnifolia)*	4	0-12	73
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	14	0-30	91
UNDIFFERENTIATED ROSE *(Rosa)*	14	1-30	100
WILD RED RASPBERRY *(Rubus idaeus)*	2	0-6	80
Forb			
COMMON DANDELION *(Taraxacum officinale)*	1	0-3	53
CREAM-COLORED VETCHLING *(Lathyrus ochroleucus)*	2	0-6	60
GOLDEN BEAN *(Thermopsis rhombifolia)*	1	0-2	47
NORTHERN BEDSTRAW *(Galium boreale)*	3	0-7	93
STAR-FLOWERED SOLOMON'S-SEAL *(Smilacina stellata)*	1	0-2	67
UNDIFFERENTIATED GOLDENROD *(Solidago)*	2	0-6	80
UNDIFFERENTIATED WILLOW *(Salix)*	2	0-6	60
WILD STRAWBERRY *(Fragaria virginiana)*	1	0-3	53
WILD VETCH *(Vicia americana)*	2	0-5	73
Grass			
AWNLESS BROME *(Bromus inermis)*	2	0-4	60
KENTUCKY BLUEGRASS *(Poa pratensis)*	4	0-12	87
PURPLE OAT GRASS *(Schizachne purpurascens)*	2	0-12	80
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	3	1-9	100
UNDIFFERENTIATED SEDGE *(Carex)*	9	6-15	100

Environmental Variables

Moisture Regime: MESIC(100)

Nutrient Regime: MESOTROPHIC(100)

Elevation (range): 700(671-713) M

Slope: 0.5 - 2.5(50), 3 - 5(50)

Aspect: Variable(100)

Soil Drainage: Well drained(100)

Soil Subgroup: O.DB, O.BL

Soil Series: CNN, EOR, HND, IRM, ROS, ACE, BEL, BLL

Soil Correlation: SCA 4, SCA 7

Range Site Category: Lo, Cl, Sy

Ecological Status Score: 25

LFH Statistics (cm)	Mean	Min	Max
Thickness (cm):	4.00	1.00	13.00
Litter:			

Soil Exposure	Mean	Min	Max
%:	0		
Comment:			

Forage Production (kg/ha) n=	Mean	Min	Max
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	1054	785	1681
Total	1053.65	784.63	1681.35

Ecologically Sustainable Stocking Rate

2.20 (2.69-1.61) HA/AUM or *0.18 (0.15-0.25) AUM/AC*

CPD28. Aspen/Snowberry/Awned wheat grass

(Populus tremuloides/Symphoricarpus occidentalis/Agropyron subsecundum)

n=5 This Aspen/ Snowberry/ Awned wheat grass type is a PNC (reference plant community) deciduous community found on upper slopes, terraces and undulating areas. Where the landform is hummocky or rolling this type is found on the northern aspects.

Natural Subregion: CENTRAL PARKLAND

Ecosite: g Plains rough fescue/Snowberry (mesic/rich)

Ecosite Phase: g3 deciduous

Plant Composition	Canopy Cover (%)		
	Mean	Range	Const.
Tree			
ASPEN *(Populus tremuloides)*	45	30-70	100
Shrub			
ASPEN *(Populus tremuloides)*	4	0-8	80
COMMON WILD ROSE *(Rosa woodsii)*	7	5-13	100
NORTHERN GOOSEBERRY *(Ribes oxyacanthoides)*	3	0-6	80
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	11	6-22	100
WILD RED RASPBERRY *(Rubus idaeus)*	8	0-15	80
Forb			
COMMON DANDELION *(Taraxacum officinale)*	2	0-6	80
COMMON FIREWEED *(Epilobium angustifolium)*	1	0-5	40
NODDING STICKSEED *(Hackelia americana)*	2	1-3	100
NORTHERN BEDSTRAW *(Galium boreale)*	1	0-4	60
RICHARDSON'S ALUMROOT *(Heuchera richardsonii)*	1	0-2	40
SMOOTH ASTER *(Aster laevis)*	1	0-4	60
WILD STRAWBERRY *(Fragaria virginiana)*	2	0-4	40
Grass			
AWNLESS BROME *(Bromus inermis)*	8	0-27	80
FRINGED BROME *(Bromus ciliatus)*	2	0-7	40
HAY SEDGE *(Carex siccata)*	3	0-7	80
KENTUCKY BLUEGRASS *(Poa pratensis)*	2	0-4	80
PLAINS ROUGH FESCUE *(Festuca hallii)*	3	0-12	40
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	12	4-26	100

Environmental Variables

Moisture Regime: SUBMESIC()

Nutrient Regime: MESOTROPHIC()

Elevation (range): (-) M

Slope: 6 - 9()

Aspect: Northerly()

Soil Drainage: Moderate well drain()

Soil Subgroup: O.GL

Soil Series:

Soil Correlation: SCA 7

Range Site Category: Lo

Ecological Status Score: 25

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

2.00 (2.69-1.61) HA/AUM or *0.20 (0.15-0.25) AUM/AC*

CPD14. Aspen/Beaked hazelnut

(Populus tremuloides/Corylus cornuta)

n=3 Typically it is found on slopes and is dominated by a mature aspen canopy with a shrub layer consisting primarily of beaked hazelnut. Due to the dense cover the forb layer tends to be sparse (Wheatley and Bentz 2002).

Natural Subregion: CENTRAL PARKLAND

Ecosite: g Plains rough fescue/Snowberry (mesic/rich)

Ecosite Phase: g3 deciduous

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Tree			
ASPEN *(Populus tremuloides)*	35	5-55	100
Shrub			
BEAKED HAZELNUT *(Corylus cornuta)*	13	11-14	100
CHOKE CHERRY *(Prunus virginiana)*	4	0-8	67
CREEPING JUNIPER *(Juniperus horizontalis)*	3	1-7	100
SASKATOON *(Amelanchier alnifolia)*	5	2-10	100
SNOWBERRY *(Symphoricarpos albus)*	9	4-14	100
UNDIFFERENTIATED ROSE *(Rosa)*	5	4-6	100
WILD RED RASPBERRY *(Rubus idaeus)*	2	0-4	67
Forb			
CREAM-COLORED VETCHLING *(Lathyrus ochroleucus)*	1	0-2	67
GOLDEN BEAN *(Thermopsis rhombifolia)*	1	0-2	67
LINDLEY'S ASTER *(Aster ciliolatus)*	1	0-4	33
NORTHERN BEDSTRAW *(Galium boreale)*	1	0-1	67
TWINING HONEYSUCKLE *(Lonicera dioica)*	2	2-3	100
VEINY MEADOW RUE *(Thalictrum venulosum)*	1	0-3	67
WILD LILY-OF-THE-VALLEY *(Maianthemum canadense)*	1	0-3	67
Grass			
KENTUCKY BLUEGRASS *(Poa pratensis)*	1	0-2	33
PURPLE OAT GRASS *(Schizachne purpurascens)*	2	1-2	100
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	1	1-1	100
UNDIFFERENTIATED SEDGE *(Carex)*	5	1-9	100
WHITE-GRAINED MOUNTAIN RICE GRASS *(Oryzopsis asperifolia)*	3	3-5	100

Environmental Variables

Moisture Regime: SUBHYGRIC()

Nutrient Regime: MESOTROPHIC()

Elevation (range): 692(672-709) M

Slope: 3 - 5(), 6 - 9(), 10 - 15()

Aspect: Variable()

Soil Drainage: Well drained()

Soil Subgroup: O.DB, O.GL

Soil Series:

Soil Correlation: SCA 4, SCA 7

Range Site Category: Sb, Lo, Sy

Ecological Status Score: 25

Soil Exposure

	Mean	**Min**	**Max**
%:	0		

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	560	448	673
Total	560.45	448.36	672.54

Ecologically Sustainable Stocking Rate

2.20 (2.69-1.61) HA/AUM or *0.18 (0.15-0.25) AUM/AC*

9.7.4 Rough fescue/ Snowberry (mesic/ rich): Conifer

Characteristic Species:

Tree: White spruce, Aspen
Shrub: Snowberry, Choke cherry, Rose, Saskatoon

Community Types:

CPE2: White spruce/Moss (1)

CPE2. White spruce/Moss

(Picea glauca/Moss spp.)

n=1 This community type was described on a river terrace above the Red Deer River and represents the succession of aspen dominated community types in the absence of disturbance. This community was described on northerly aspects, which probably escaped fire and disturbance, allowing succession to occur. Note as succession occurs there is a corresponding drop in forage productivity from 500-1000 kg/ha in the Aspen community types to 201kg/ha in this community type. This community type would be rated as non-use for domestic livestock.

Natural Subregion: CENTRAL PARKLAND

Ecosite: g Plains rough fescue/Snowberry (mesic/rich)

Ecosite Phase: g4 conifer

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Tree			
BALSAM POPLAR *(Populus balsamifera)*	3	3-3	100
WHITE SPRUCE *(Picea glauca)*	70	70-70	100
Shrub			
PRICKLY ROSE *(Rosa acicularis)*	1		100
RED-OSIER DOGWOOD *(Cornus stolonifera)*	1	1-1	100
SASKATOON *(Amelanchier alnifolia)*	1	1-1	100
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	1	1-1	100
Forb			
COMMON HORSETAIL *(Equisetum arvense)*	1	1-1	100
SMOOTH ASTER *(Aster laevis)*	1	1-1	100
VEINY MEADOW RUE *(Thalictrum venulosum)*	1	1-1	100
WILD STRAWBERRY *(Fragaria virginiana)*	1	1-1	100
WILD VETCH *(Vicia americana)*	1	1-1	100
Grass			
AWNLESS BROME *(Bromus inermis)*	1	1-1	100
BLUEJOINT *(Calamagrostis canadensis)*	1	1-1	100
BRISTLE-LEAVED SEDGE *(Carex eburnea)*	3	3-3	100
NORTHERN WHEAT GRASS *(Agropyron dasystachyum)*	1	1-1	100
PURPLE OAT GRASS *(Schizachne purpurascens)*	1	1-1	100

Environmental Variables

Moisture Regime: MESIC()

Nutrient Regime: MESOTROPHIC()

Elevation (range): 910(-) M

Slope: 0 - 0.5()

Aspect: Northerly()

Soil Drainage: Well drained()

Soil Subgroup:

Soil Series:

Soil Correlation: SCA 7

Range Site Category: Lo, Sb, TB, Ov

Ecological Status Score: 25

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb	138		
Grass	60		
Shrub	3		
Tree			
Total	201	0	0

Ecologically Sustainable Stocking Rate

4.04 (8.09-2.69) HA/AUM or *0.10 (0.05-0.15) AUM/AC*

9.7.5 Plains rough fescue/ Snowberry (mesic/ rich): Industrial

Characteristic Species:

Grass: Kentucky bluegrass, Smooth brome, Creeping red fescue, Timothy
Forb: Dandelion

Community Types:

CPI2: Creeping red fescue- Kentucky bluegrass (4)
CPI3: Kentucky bluegrass- Northern wheat grass/ Dandelion (56)
CPI4: Slender wheat grass- Kentucky bluegrass (2)
CPI5: Smooth brome- Kentucky bluegrass/ Dandelion (17)
CPI6: Timothy- Smooth brome (3)

CPI2. Creeping red fescue-Kentucky bluegrass

(Festuca rubra-Poa pratensis)

n=4 This type is found on wellsites approximately 25 years old. Generally, it has less invasion from the surrounding native plant community, and contains more weedy species.

Natural Subregion: CENTRAL PARKLAND

Ecosite: g Plains rough fescue/Snowberry (mesic/rich)

Ecosite Phase: g5 Industrial

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Forb			
CANADA THISTLE *(Cirsium arvense)*	3	0-6	75
COMMON DANDELION *(Taraxacum officinale)*	6	0-14	75
UNDIFFERENTIATED VETCH *(Vicia)*	1	0-1	50
Grass			
AWNLESS BROME *(Bromus inermis)*	1	0-4	50
CANADA BLUEGRASS *(Poa compressa)*	6	0-11	75
CREEPING RED FESCUE *(Festuca rubra)*	52	21-65	100
KENTUCKY BLUEGRASS *(Poa pratensis)*	9	3-13	100
NORTHERN WHEAT GRASS *(Agropyron dasystachyum)*	1	0-3	50
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	6	0-15	75

Environmental Variables

Moisture Regime: MESIC()

Nutrient Regime: PERMESOTROPHIC()

Elevation (range): (-) M

Slope: 0 - 0.5()

Aspect: Level()

Soil Drainage: Well drained()

Soil Subgroup: O.DB, O.BL

Soil Series: EOR

Soil Correlation: SCA 7

Range Site Category: Lo

Ecological Status Score: 8

Soil Exposure	Mean	Min	Max
%:	9	0	17

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

1.34 (1.61-0.80) HA/AUM or *0.30 (0.25-0.51) AUM/AC*

CPI3. Kentucky bluegrass-Northern wheat grass/Dandelion

(Poa pratensis-Agropyron dasystachyum/Taraxacum officinale)

n=56 This plant community is found on reclaimed wellsites. The original seed mix was likely a Slender wheat grass cultivar, Kentucky bluegrass and a Northern wheat grass cultivar. This seed mix was popular in the Rumsey area during the late 1980's, as it was one of the first attempts to try and relcaim a native plant community. With heavy grazing these sites become dominated by Kentucky bluegrass. Under light grazing, however, these communities will see more invasion from the surrounding native plant community. Light stocking rates are recommended to enable sites to recover and to reduce the risk of weedy species invading the significant amount of bare soil associated with this type.

Natural Subregion: CENTRAL PARKLAND

Ecosite: g Plains rough fescue/Snowberry (mesic/rich)

Ecosite Phase: g5 Industrial

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	2	0-16	54
Forb			
CANADA THISTLE *(Cirsium arvense)*	3	0-20	52
COMMON DANDELION *(Taraxacum officinale)*	11	0-37	95
COMMON YARROW *(Achillea millefolium)*	4	0-11	79
PASTURE SAGEWORT *(Artemisia frigida)*	7	0-32	86
PRAIRIE SAGEWORT *(Artemisia ludoviciana)*	4	0-31	61
UNDIFFERENTIATED VETCH *(Vicia)*	3	0-14	59
Grass			
AWNLESS BROME *(Bromus inermis)*	2	0-20	38
BLUEGRASSES *(Poa spp.)*	1	0-5	36
CREEPING RED FESCUE *(Festuca rubra)*	2	0-14	39
KENTUCKY BLUEGRASS *(Poa pratensis)*	25	0-76	96
NORTHERN WHEAT GRASS *(Agropyron dasystachyum)*	12	0-48	88
ROUGH HAIR GRASS *(Agrostis scabra)*	1	0-10	45
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	4	0-36	52
WESTERN PORCUPINE GRASS *(Stipa curtiseta)*	1	0-9	32
WESTERN WHEAT GRASS *(Agropyron smithii)*	1	0-11	41

Environmental Variables

Moisture Regime: MESIC()

Nutrient Regime: PERMESOTROPHIC()

Elevation (range): (-) M

Slope: 0 - 0.5()

Aspect: Northerly(), Variable()

Soil Drainage: Well drained()

Soil Subgroup: O.DB, O.BL

Soil Series: EOR

Soil Correlation: SCA 7

Range Site Category: Lo

Ecological Status Score: 15

Soil Exposure	Mean	Min	Max
%:	25	0	61

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

1.34 (1.61-0.80) HA/AUM or *0.30 (0.25-0.51) AUM/AC*

CPI4. Slender wheat grass-Kentucky bluegrass

(Agropyron trachycaulum-Poa pratensis)

n=2 This site is on a wellsite in the Rumsey Block and is approximately 25 years old; the original seed mix for this plant community type is unknown. Native forbs have invaded the site, however invasion can be sporadic and is dependant on grazing pressure and the amount of top soil retained on the site. The adjacent undisturbed plant community is a modal Plains rough fescue community type (CPA25).

Natural Subregion: CENTRAL PARKLAND

Ecosite: g Plains rough fescue/Snowberry (mesic/rich)

Ecosite Phase: g5 Industrial

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Grass			
AWNLESS BROME *(Bromus inermis)*	5	1-8	100
KENTUCKY BLUEGRASS *(Poa pratensis)*	14	9-20	100
QUACK GRASS *(Agropyron repens)*	7	1-13	100
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	16	6-25	100

Environmental Variables

Moisture Regime: MESIC()

Nutrient Regime: PERMESOTROPHIC()

Elevation (range): (-) M

Slope: 0.5 - 2.5(100)

Aspect: Southerly(50)

Soil Drainage: Well drained()

Soil Subgroup: O.DB, O.BL

Soil Series: EOR

Soil Correlation: SCA 7

Range Site Category: Lo

Ecological Status Score: 15

Soil Exposure

	Mean	**Min**	**Max**
%:	1	0	1

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

1.61 (2.02-1.01) HA/AUM or *0.25 (0.20-0.40) AUM/AC*

CPI5. Smooth brome-Kentucky bluegrass/Dandelion

(Bromus inermis-Poa pratensis/Taraxacum officinale)

n=17 This community is found on wellsites approximately 25 years old. The expected surrounding native vegetation in relatively good condition is Plains rough fescue communities. These Smooth brome- Kentucky bluegrass/ Dandelion sites may contain a wide variety of native plants (as found in the above native plant type), depending on the amount of grazing pressure on the site.

Natural Subregion: CENTRAL PARKLAND

Ecosite: g Plains rough fescue/Snowberry (mesic/rich)

Ecosite Phase: g5 Industrial

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Forb			
ALFALFA *(Medicago sativa)*	10	0-40	71
COMMON DANDELION *(Taraxacum officinale)*	11	0-31	94
COMMON YARROW *(Achillea millefolium)*	2	0-6	65
PASTURE SAGEWORT *(Artemisia frigida)*	5	0-21	88
PRAIRIE SAGEWORT *(Artemisia ludoviciana)*	3	0-12	59
UNDIFFERENTIATED VETCH *(Vicia)*	1	0-2	35
Grass			
AWNLESS BROME *(Bromus inermis)*	24	14-37	100
CREEPING RED FESCUE *(Festuca rubra)*	6	0-26	59
CRESTED WHEAT GRASS *(Agropyron pectiniforme)*	7	0-16	76
KENTUCKY BLUEGRASS *(Poa pratensis)*	14	2-35	100
NORTHERN WHEAT GRASS *(Agropyron dasystachyum)*	2	0-16	41
WESTERN PORCUPINE GRASS *(Stipa curtiseta)*	1	0-8	35

Environmental Variables

Moisture Regime: MESIC()

Nutrient Regime: PERMESOTROPHIC()

Elevation (range): (-) M

Slope: 0 - 0.5(50), 3 - 5(50)

Aspect: Variable()

Soil Drainage: Rapidly drained()

Soil Subgroup: O.DB, O.BL

Soil Series: EOR

Soil Correlation: SCA 7

Range Site Category: Lo

Ecological Status Score: 8

Soil Exposure

	Mean	**Min**	**Max**
%:	25	0	58

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

1.15 (1.34-0.67) HA/AUM or *0.35 (0.30-0.60) AUM/AC*

CPI6. Timothy-Smooth brome

(Phleum pratense-Bromus inermis)

n=3 This plant community is found on reclaimed wellsites and roads seeded in the 1980s. They have generally been grazed quite heavily due to the high desirability of these tame forages right after seeding. The amount of exposed soil on these sites is quite high, and native species invasion has been limited by heavy grazing. Light stocking rates should be applied to encourage recovery of the site and to prevent the establishment of weedy species.

Natural Subregion: CENTRAL PARKLAND

Ecosite: g Plains rough fescue/Snowberry (mesic/rich)

Ecosite Phase: g5 Industrial

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Forb			
ALSIKE CLOVER *(Trifolium hybridum)*	2	1-2	100
COMMON DANDELION *(Taraxacum officinale)*	3	1-4	100
COMMON YARROW *(Achillea millefolium)*	1	0-4	67
Grass			
AWNLESS BROME *(Bromus inermis)*	17	4-24	100
CREEPING RED FESCUE *(Festuca rubra)*	1	0-3	33
CRESTED WHEAT GRASS *(Agropyron pectiniforme)*	1	0-4	67
FOWL BLUEGRASS *(Poa palustris)*	2	0-3	67
KENTUCKY BLUEGRASS *(Poa pratensis)*	2	0-3	67
TIMOTHY *(Phleum pratense)*	18	2-41	100

Environmental Variables

Moisture Regime: MESIC()

Nutrient Regime: PERMESOTROPHIC()

Elevation (range): (-) M

Slope: 0.5 - 2.5()

Aspect: Easterly()

Soil Drainage: Well drained()

Soil Subgroup: O.DB, O.BL

Soil Series: EOR

Soil Correlation: SCA 7

Range Site Category: Lo

Ecological Status Score: 8

Soil Exposure

	Mean	**Min**	**Max**
%:	36	0	88

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

1.15 (1.34-0.67) HA/AUM or *0.35 (0.30-0.60) AUM/AC*

9.7.6 Plains rough fescue/ Snowberry (mesic/ rich): Tame

Characteristic Species:

Grass: Smooth brome, Kentucky bluegrass, Meadow brome
Forb: Alfalfa, Dandelion, Yarrow
Shrub: Rose, Snowberry

Community Types:

CPB1: Alfalfa/ Brome- Kentucky bluegrass (6)
CPB2: Kentucky bluegrass- Smooth brome (15)
CPB3: Snowberry/ Kentucky bluegrass- Smooth brome (10)
CPB4: Meadow brome (5)

CPB1. Alfalfa/Brome-Kentucky bluegrass

(Medicago sativa/Bromus spp.- Poa pratensis)

n=6 This plant community represents a common productive or newer tame pasture stand on pasture/hayland in the Central Parkland. The stands are approximately 5 - 15 years old and were originally seeded as brome/alfalfa mixes. This community is moderately productive. Grazing regimes must include timely rest to maintain the alfalfa and brome. Continuous grazing will accelerate the invasion of Kentucky bluegrass and lead to the formation of a CPB2 community. Common forb invaders of this community are common yarrow, pasture sage and dandelion

Natural Subregion: CENTRAL PARKLAND

Ecosite: g Plains rough fescue/Snowberry (mesic/rich)

Ecosite Phase: g6 tame

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Forb			
ALFALFA *(Medicago sativa)*	22	6-34	100
COMMON DANDELION *(Taraxacum officinale)*	2	0-9	67
COMMON YARROW *(Achillea millefolium)*	2	0-7	50
PASTURE SAGEWORT *(Artemisia frigida)*	2	0-9	50
Grass			
AWNLESS BROME *(Bromus inermis)*	25	0-66	83
CRESTED WHEAT GRASS *(Agropyron pectiniforme)*	3	0-8	67
KENTUCKY BLUEGRASS *(Poa pratensis)*	20	4-38	100
MEADOW BROME *(Bromus biebersteinii)*	23	0-67	87

Environmental Variables

Moisture Regime: MESIC()

Nutrient Regime: PERMESOTROPHIC()

Elevation (range): 671(567-705) M

Slope: 0 - 0.5(), 0.5 - 2.5()

Aspect: Northerly(), Variable()

Soil Drainage: Well drained()

Soil Subgroup: O.DB, O.BL

Soil Series: EOR, HND, IRM, WWT

Soil Correlation: SCA 4, SCA 7, SCA 10

Range Site Category: Lo

Ecological Status Score: 12

Soil Exposure	**Mean**	**Min**	**Max**
%:	7	0	19

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

0.40 (0.67-0.33) HA/AUM or *1.01 (0.60-1.23) AUM/AC*

CPB2. Kentucky bluegrass- Smooth brome

(Poa pratensis-Bromus inermis)

n=15 This plant community resembles an older stand or areas with greater grazing pressures than the reference tame plant community CPB1 (Alfala/ Brome- Kentucky bluegrass). Over time, the smooth brome becomes invaded by Kentucky bluegrass resulting in Kentucky bluegrass to be dominant with an increase of forbs. Common invaders are yarrow, pussytoes, dandelion, etc.

Natural Subregion: CENTRAL PARKLAND

Ecosite: g Plains rough fescue/Snowberry (mesic/rich)

Ecosite Phase: g6 tame

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	1	0-4	40
Forb			
COMMON DANDELION *(Taraxacum officinale)*	3	0-15	53
COMMON YARROW *(Achillea millefolium)*	3	0-10	80
LOW GOLDENROD *(Solidago missouriensis)*	1	0-5	40
NORTHERN BEDSTRAW *(Galium boreale)*	1	0-6	40
PASTURE SAGEWORT *(Artemisia frigida)*	1	0-7	40
PRAIRIE SAGEWORT *(Artemisia ludoviciana)*	3	0-9	53
Grass			
AWNLESS BROME *(Bromus inermis)*	30	9-59	100
KENTUCKY BLUEGRASS *(Poa pratensis)*	41	8-68	100
MEADOW BROME *(Bromus biebersteinii)*	1	0-12	27
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	1	0-5	33
UNDIFFERENTIATED SEDGE *(Carex)*	2	0-14	47

Environmental Variables

Moisture Regime: SUBMESIC(), MESIC()

Nutrient Regime: MESOTROPHIC(), PERMESOTROPHIC()

Elevation (range): 674(577-749) M

Slope: 0 - 0.5(), 0.5 - 2.5()

Aspect: Northerly(), Variable()

Soil Drainage: Well drained()

Soil Subgroup: O.DB, O.BL

Soil Series: EOR, HND, IRM, WWT

Soil Correlation: SCA 4, SCA 7, SCA 10

Range Site Category: Lo, Cl, Sy

Ecological Status Score: 9

Soil Exposure

	Mean	**Min**	**Max**
%:	4	0	13

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

0.57 (1.01-0.45) HA/AUM or *0.71 (0.40-0.90) AUM/AC*

CPB3. Snowberry/Kentucky bluegrass-Smooth brome

(Symphoricarpos occidentalis/Poa pratensis-Bromus inermis)

n=10 This plant community is the last successional stage before the community shifts to a shrubland plant community. Shrub encroachment is occuring due to lack of fire and range improvements (i.e. mowing, spraying, etc). It is possible the snowberry could have been origionally present in the stand prior to it being cleared. Found on slighly mesic areas and not so much sandy soils. Forage productivity of the site varies depending on shrub density and soil moisture regime.

Natural Subregion: CENTRAL PARKLAND

Ecosite: g Plains rough fescue/Snowberry (mesic/rich)

Ecosite Phase: g6 tame

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
COMMON WILD ROSE *(Rosa woodsii)*	1	0-9	30
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	15	9-20	100
Forb			
COMMON YARROW *(Achillea millefolium)*	1	0-4	70
GOLDEN BEAN *(Thermopsis rhombifolia)*	1	0-5	30
PASTURE SAGEWORT *(Artemisia frigida)*	4	0-21	50
PRAIRIE SAGEWORT *(Artemisia ludoviciana)*	2	0-5	60
WILD STRAWBERRY *(Fragaria virginiana)*	1	0-5	40
WILD VETCH *(Vicia americana)*	1	0-3	70
Grass			
AWNLESS BROME *(Bromus inermis)*	21	7-58	100
KENTUCKY BLUEGRASS *(Poa pratensis)*	21	8-54	100
MEADOW BROME *(Bromus biebersteinii)*	6	0-37	20
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	4	0-29	40
UNDIFFERENTIATED SEDGE *(Carex)*	3	0-12	70

Environmental Variables

Moisture Regime: MESIC()

Nutrient Regime: PERMESOTROPHIC()

Elevation (range): 680(600-736) M

Slope: 0 - 0.5(), 0.5 - 2.5()

Aspect: Variable()

Soil Drainage: Well drained()

Soil Subgroup: O.DB, O.BL

Soil Series: EOR, HND, IRM, MET, WWT

Soil Correlation: SCA 4, SCA 7, SCA 10

Range Site Category: Lo, Cl, Sy

Ecological Status Score: 5

Soil Exposure

	Mean	**Min**	**Max**
%:	3	0	7

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

0.57 (1.01-0.45) HA/AUM or *0.71 (0.40-0.90) AUM/AC*

Successional pathway: CPB1→ CPB2→ CPB3

CPB1:Alfalfa/ Brome- Kentucky bluegrass

This plant community represents a common stand on pasture/hayland. These stands are approximately 5-15 years old and were originally seeded as an alfalfa/ brome mix. This community is moderately productive.

CPB2:Kentucky bluegrass- Smooth brome

This plant community resembles an older stand with greater grazing pressure than CPB1. Overtime the smooth brome becomes invaded by Kentucky bluegrass resulting in the bluegrass to be dominant with an increase of forbs.

CPB3: Snowberry/ Kentucky bluegrass- Smooth brome

This plant community is the last successional stage before a shrubland community. Shrub encroachment is occurring due to lack of fire, mowing, spraying etc.; resulting in much of the available forage not be utilized.

CPB4. Meadow brome

(Bromus biebersteinii)

n=5 This plant community is found in areas where it was seeded with a meadow brome pasture mix in the 1980's. These stands are not used for hay production. In some instances the meadow brome was seeded with alfalfa. Tend to be located on loamy or sandier soils (crested wheat grass more prominent in areas of sand). This plant community is long lived however not as productive as CPB1 (Alfalfa-Brome- Kentucky bluegrass) community however are low growing and tolerates grazing pressures. This plant community is susceptible to Kentucky bluegrass invasion.

Natural Subregion: CENTRAL PARKLAND

Ecosite: g Plains rough fescue/Snowberry (mesic/rich)

Ecosite Phase: g6 tame

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Forb			
COMMON DANDELION *(Taraxacum officinale)*	3	0-9	40
WILD VETCH *(Vicia americana)*	1	0-4	40
Grass			
CRESTED WHEAT GRASS *(Agropyron pectiniforme)*	13	0-35	80
KENTUCKY BLUEGRASS *(Poa pratensis)*	10	2-29	100
MEADOW BROME *(Bromus biebersteinii)*	56	44-79	100

Environmental Variables

Moisture Regime: SUBMESIC(), MESIC()

Nutrient Regime: MESOTROPHIC(), PERMESOTROPHIC()

Elevation (range): 645(597-680) M

Slope: 0 - 0.5(), 0.5 - 2.5(), 3 - 5()

Aspect: Northerly(), Variable()

Soil Drainage: Rapidly drained(), Well drained()

Soil Subgroup: O.DB, O.BL

Soil Series: EOR, HND, IRM, MET, WWT

Soil Correlation: SCA 4, SCA 7, SCA 10

Range Site Category: Lo

Ecological Status Score: 12

Soil Exposure	Mean	Min	Max
%:	8	4	12

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

0.50 (0.67-0.40) HA/AUM or *0.81 (0.60-1.01) AUM/AC*

9.8 Silver sagebrush (subhygric/ medium- h)

General Description: Overflow sites apply to non-saline Chernozemic or Regosolic soils on landscapes that are low-relief inclines in valley or basinal settings. Overflow sites are usually fan or apron deposits, where upslope streams enter lowland areas and experience a marked decrease in gradient. Slopes generally range from 2% to 9%. Overflow sites only occur on lower slope positions or adjacent to streams and the percentage of eligible overflow ranges from 10% to 50%.

Successional Relationships: Sites which are rich in sodium sulphate salts derived from parent materials associated with Bearpaw shale will favour the growth of silver sagebrush and western wheat grass. These soil conditions reduce the competitive advantage of other grass species in these environments. Heavy grazing pressure will significantly diminish vegetation canopy cover. Grazing resistant species like sandberg bluegrass will increase in abundance while canopy cover and composition of northern and western wheat grass will decline.

Indicator species: Western wheat grass, Silver sagebrush, Snowberry, Tufted white prairie aster, Nuttall's atriplex

Site Characteristics:

Moisture Regime: Subhygric, Mesic, Subhydric
Nutrient Regime: Mesotrophic, Submesotrophic, Permoesotropic
Topographic Position: Level
Slope: 0- 0.5%
Aspect: Variable

Soil Characteristics:

Organic Thickness: 0- 15 cm
Surface Texture: L, SiCL
Soil Drainage: Well drained
Soil Subgroup: O.DB, BL.SS

9.8.1 Silver sagebrush (subhygric/ medium): Shrubland

Community Types:

CPC4: Silver sagebrush/ Western wheat grass (1)

CPC4. Silver sagebrush/Western wheat grass

(Artemisia cana/Agropyron smithii)

n=1 This community was described on a delta fan at the foot of a canyon wall in Dry Island Buffalo Jump provincial park. Thompson and Hansen (2002) described a silver sagebrush/western wheat grass on alluvial terraces on both broad and narrow floodplains throughout the grassland natural region of Alberta. They found that this community type represented sites with deep, loamy, alluvial soils where overland flow or soil conditions had a greater than normal moisture regime. In southern Alberta this community type has been identified as critically important habitat to the survival of the sage grouse. Care should be taken when grazing this community type. Heavy livestock grazing will decrease the cover of western wheatgrass and green needle grass and allow Kentucky bluegrass, smooth brome and dandelion to increase onto the site (Thompson and Hansen 2002). Similiar sites have been observed along the Battle River and Red Deer River.

Natural Subregion: CENTRAL PARKLAND

Ecosite: h Silver sagebrush (subhygric/medium)

Ecosite Phase: h2 shrubland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
SILVER SAGEBRUSH *(Artemisia cana)*	40		100
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	3		100
Forb			
NUTTALL'S ATRIPLEX *(Atriplex nuttallii)*	3		100
PASTURE SAGEWORT *(Artemisia frigida)*	3		100
TUFTED WHITE PRAIRIE ASTER *(Aster ericoides)*	3		100
Grass			
GREEN NEEDLE GRASS *(Stipa viridula)*	1		100
WESTERN WHEAT GRASS *(Agropyron smithii)*	50		100

Environmental Variables

Moisture Regime: MESIC(), SUBHYGRIC(), SUBHYDRIC()

Nutrient Regime: SUBMESOTROPHIC(10), MESOTROPHIC(70), PERMESOTROPHIC(20)

Elevation (range): 723(-) M

Slope: 0 - 0.5(100)

Aspect: Variable(100)

Soil Drainage: Well drained(100)

Soil Subgroup: O.DB, BL.SS

Soil Series:

Soil Correlation: SCA 4

Range Site Category: Ov, BlO

Ecological Status Score: 40

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

1.90 (2.50-1.50) HA/AUM or *0.21 (0.16-0.27) AUM/AC*

9.9 Red osier dogwood (subhygric/ rich- i)

General Description: The dogwood ecosite is subhygric and nutrient rich. These sites are commonly found in mid or lower slope topographic positions or near water courses where they receive nutrient-rich seepage or flood waters for a portion of the growing season. Fine-textured glaciolacustrine and till parent materials are common and plant communities tend to be high in species richness, cover, and diversity.

Successional Relationships: Succession proceeds slowly after disturbance due to the proliferation of grass, forb and shrub cover. This explosion of vegetational cover can make tree establishment (especially coniferous) difficult and can reduce early growth rates. Once white spruce becomes established, high growth rates can be expected.

Indicator species: Red Osier dogwood, Willow, Balsam poplar, White spruce

Site Characteristics:

Moisture Regime: Subhygric, Mesic
Nutrient Regime: Permoesotropic
Topographic Position: Level, Lower slope, Mid slope, Upper slope
Slope: 0- 30%
Aspect: Variable

Soil Characteristics:

Organic Thickness: 0- 25 cm
Surface Texture: L, SiCL, SiL, SL, S
Soil Drainage: Moderately well drained, Imperfectly drained
Soil Subgroup: GL.DB, GLR.BL, R.HG, GL.R, O.G, O.LG, O.GL, GL.GL

9.9.1 Red osier dogwood (subhygric/ rich): Shrubland

Characteristic Species:

Tree: Aspen, White spruce, Balsam poplar
Shrub: Red osier dogwood, Yellow willow, Water birch

Community Types:

CPC9: Yellow willow- Red osier dogwood (2)
CPC10: Yellow willow/ Kentucky bluegrass (1)
CPC11: Sandbar willow (1)
CPC12: Silverberry/ Narrow reed grass (1)
CPC8: Water birch- Red osier dogwood (1)

CPC9. Yellow willow-Red osier dogwood

(Salix lutea-Cornus stolonifera)

n=2 This community is found as a narrow band parallel to the channel on the lower floodplain terraces of major rivers (Thompson and Hansen 2002). This community type is more common in the southern and eastern part of the subregion. As one moves further north it is often replaced by the flat leaved and basket willow dominated community types. Heavy grazing will often lead to a yellow willow, Kentucky bluegrass dominated community type (CPC10) and continued heavy grazing can often eliminate yellow willow in the stand.

Natural Subregion: CENTRAL PARKLAND

Ecosite: i Red osier dogwood (subhygric/rich)

Ecosite Phase: i2 shrubland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Tree			
RIVER ALDER *(Alnus tenuifolia)*	2	0-3	50
Shrub			
FLAT-LEAVED WILLOW *(Salix planifolia)*	2	0-3	50
PRICKLY ROSE *(Rosa acicularis)*	2	0-3	50
RED-OSIER DOGWOOD *(Cornus stolonifera)*	15	10-20	100
SANDBAR WILLOW *(Salix exigua)*	10	10-10	100
SHINING WILLOW *(Salix lucida)*	2	0-3	50
YELLOW WILLOW *(Salix lutea)*	40	30-50	100
Forb			
CANADA GOLDENROD *(Solidago canadensis)*	2	1-3	100
COMMON HORSETAIL *(Equisetum arvense)*	10	0-20	50
WILD VETCH *(Vicia americana)*	2	0-3	100
Grass			
AWNED SEDGE *(Carex atherodes)*	2	0-3	50
BLUEJOINT *(Calamagrostis canadensis)*	10	0-20	50
FOWL BLUEGRASS *(Poa palustris)*	7	3-10	100
KENTUCKY BLUEGRASS *(Poa pratensis)*	5	0-10	50
NORTHERN REED GRASS *(Calamagrostis inexpansa)*	2	0-5	50
QUACK GRASS *(Agropyron repens)*	2	0-3	50
REDTOP *(Agrostis stolonifera)*	5	0-10	50

Environmental Variables

Moisture Regime: SUBHYGRIC()

Nutrient Regime: PERMESOTROPHIC()

Elevation (range): 723(-) M

Slope: 0 - 0.5()

Aspect: Variable()

Soil Drainage: Moderate well drain()

Soil Subgroup:

Soil Series:

Soil Correlation: SCA 4, SCA 7

Range Site Category: LtcS

Ecological Status Score: 40

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

2.20 (2.80-1.80) HA/AUM or *0.18 (0.14-0.22) AUM/AC*

CPC10. Yellow willow/Kentucky bluegrass

(Salix lutea/Poa pratensis)

n=1 This community type represents a grazing disclimax of the Yellow willow- Red osier dogwood (CPC9) dominated community. Yellow willow is quite palatable to livestock and heavy grazing by livestock will eliminate yellow willow from the overstory and will allow Kentucky bluegrass and timothy to invade. Once established these introduced species are very palatable to livestock and this community type would be extensively utilized.

Natural Subregion: CENTRAL PARKLAND

Ecosite: i Red osier dogwood (subhygric/rich)

Ecosite Phase: i2 shrubland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
SANDBAR WILLOW *(Salix exigua)*	10		100
YELLOW WILLOW *(Salix lutea)*	30		100
Forb			
CANADA GOLDENROD *(Solidago canadensis)*	10		100
WESTERN WILLOW ASTER *(Aster hesperius)*	3		100
WILD VETCH *(Vicia americana)*	10		100
Grass			
AWNLESS BROME *(Bromus inermis)*	10		100
BLUEJOINT *(Calamagrostis canadensis)*	3		100
FOWL BLUEGRASS *(Poa palustris)*	20		100
KENTUCKY BLUEGRASS *(Poa pratensis)*	20		100
REED CANARY GRASS *(Phalaris arundinacea)*	10		50

Environmental Variables

Moisture Regime: SUBHYGRIC()

Nutrient Regime: PERMESOTROPHIC()

Elevation (range): 723(-) M

Slope: 0 - 0.5()

Aspect: Variable()

Soil Drainage: Moderate well drain()

Soil Subgroup:

Soil Series:

Soil Correlation: SCA 4, SCA 7

Range Site Category: LtcS

Ecological Status Score: 15

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

2.24 (2.89-1.34) HA/AUM or *0.18 (0.14-0.30) AUM/AC*

CPC11. Sandbar willow

(Salix exigua)

n=1 This community type occurs on moist alluvial deposits which are adjacent to streams and rivers. This community can persist for some time if the site is subject to frequent flooding. However in the absence of disturbance it will eventually undergo succession to a spruce dominated community type. Thompson and Hansen (2002) described this community in the grassland natural region of southern Alberta. They found that this community type disappeared as one moved north into the Parkland and it was replaced by basket willow dominated community types. Typically there is little understory vegetation found in this community type and it should be rated as non-use for livestock.

Natural Subregion: CENTRAL PARKLAND

Ecosite: i Red osier dogwood (subhygric/rich)

Ecosite Phase: i2 shrubland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Tree			
BALSAM POPLAR *(Populus balsamifera)*	1		100
Shrub			
SANDBAR WILLOW *(Salix exigua)*	40		100
Forb			
COMMON HORSETAIL *(Equisetum arvense)*	10		100
Grass			
CREEPING SPIKE-RUSH *(Eleocharis palustris)*	3		100
FOWL BLUEGRASS *(Poa palustris)*	10		100
KENTUCKY BLUEGRASS *(Poa pratensis)*	3		100
NORTHERN REED GRASS *(Calamagrostis inexpansa)*	3		100
REDTOP *(Agrostis stolonifera)*	10		100
SMALL-FRUITED BULRUSH *(Scirpus microcarpus)*	10		100
WOOLLY SEDGE *(Carex lanuginosa)*	10		100

Environmental Variables

Moisture Regime: SUBHYGRIC()

Nutrient Regime: PERMESOTROPHIC()

Elevation (range): 910(-) M

Slope: 0 - 0.5()

Aspect: Variable()

Soil Drainage: Moderate well drain()

Soil Subgroup:

Soil Series:

Soil Correlation: SCA 4

Range Site Category: LtcS

Ecological Status Score: 40

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

4.04 (8.09-2.69) HA/AUM or *0.10 (0.05-0.15) AUM/AC*

CPC12. Silverberry/Narrow reed grass

(Elaeagnus commutata/Calamagrostis stricta)

n=1 This community type is the wettest of the silverberry community types described in the Central Parkland Natural Subregion and was described along the shore of Buffalo lake near Rochon Sands Provincial Park. Silverberry can occur on alluvial floodplain terraces, in V-shaped ravines and swale-like depressions where overland flows provide additional moisture, and on hillsides where seeps or snow accumulations provide additional moisture (Thompson and Hansen 2002). This community likely represents the transition from the upland to lowland sites dominated by bulrush and reed grass. As the lake shore recedes silverberry will invade into the drier edges.

Natural Subregion: CENTRAL PARKLAND

Ecosite: i Red osier dogwood (subhygric/rich)

Ecosite Phase: i2 shrubland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
SILVERBERRY *(Elaeagnus commutata)*	90		100
Forb			
CANADA GOLDENROD *(Solidago canadensis)*	3		100
CANADA THISTLE *(Cirsium arvense)*	3		100
PERENNIAL SOW-THISTLE *(Sonchus arvensis)*	10		100
SILVERWEED *(Potentilla anserina)*	3		100
Grass			
NARROW REED GRASS *(Calamagrostis stricta)*	70		100
WIRE RUSH *(Juncus balticus)*	3		100
WOOLLY SEDGE *(Carex lanuginosa)*	3		100

Environmental Variables

Moisture Regime: SUBHYGRIC()

Nutrient Regime: PERMESOTROPHIC()

Elevation (range): 787(-) M

Slope: 0 - 0.5()

Aspect: Variable()

Soil Drainage: Moderate well drain()

Soil Subgroup:

Soil Series:

Soil Correlation: SCA 10

Range Site Category: Sb, LtcD

Ecological Status Score: 40

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

2.00 (2.50-1.50) HA/AUM or *0.20 (0.16-0.27) AUM/AC*

CPC8. Water birch-Red osier dogwood

(Betula occidentalis-Cornus stolonifera)

n=1 This community type was described along a gully bottom adjacent to the Red Deer River near Dry Island Buffalo Jump Provincial Park. Thompson and Hansen (2002) described this community type on alluvial terraces, streambanks, abandoned channels on river floodplains and moist areas around springs and seeps. Livestock generally do not prefer this community type because of the dense nature of the understory, but heavy grazing pressure can reduce the understory cover and allow Kentucky bluegrass, timothy and smooth brome to invade.

Natural Subregion: CENTRAL PARKLAND

Ecosite: i Red osier dogwood (subhygric/rich)

Ecosite Phase: i2 shrubland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Tree			
ASPEN *(Populus tremuloides)*	3		100
BALSAM POPLAR *(Populus balsamifera)*	3		100
WHITE SPRUCE *(Picea glauca)*	3		100
Shrub			
CHOKE CHERRY *(Prunus virginiana)*	3		100
PRICKLY ROSE *(Rosa acicularis)*	3		100
RED-OSIER DOGWOOD *(Cornus stolonifera)*	10		100
SANDBAR WILLOW *(Salix exigua)*	3		100
SASKATOON *(Amelanchier alnifolia)*	3		100
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	3		100
WATER BIRCH *(Betula occidentalis)*	30		100
YELLOW WILLOW *(Salix lutea)*	3		100
Forb			
CANADA GOLDENROD *(Solidago canadensis)*	3		100
COMMON HORSETAIL *(Equisetum arvense)*	3		100
SMOOTH ASTER *(Aster laevis)*	3		100
WILD VETCH *(Vicia americana)*	3		100
Grass			
AWNLESS BROME *(Bromus inermis)*	10		100
FOWL BLUEGRASS *(Poa palustris)*	3		100

Environmental Variables

Moisture Regime: SUBHYGRIC()

Nutrient Regime: PERMESOTROPHIC()

Elevation (range): 723(-) M

Slope: 3 - 5()

Aspect: Variable()

Soil Drainage: Moderate well drain()

Soil Subgroup:

Soil Series:

Soil Correlation: SCA 4, SCA 7

Range Site Category: Sb, LtcD

Ecological Status Score: 40

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

2.69 (8.09-1.61) HA/AUM or *0.15 (0.05-0.25) AUM/AC*

9.9.2 Red osier dogwood (subhygric/ rich): Deciduous

Characteristic Species:

Tree: Aspen, Balsam poplar, White spruce
Shrub: Red osier dogwood, Saskatoon, Snowberry, Beaked hazelnut
Forb: Wild sarsaparilla

Community Types:

CPD6: Aspen- Balsam poplar/ Saskatoon- Red osier dogwood- Snowberry (6)
CPD21: Balsam poplar- Aspen/ Snowberry- Rose (26)
CPD8: Balsam poplar- Aspen/ Snowberry- Kentucky bluegrass (2)
CPD11: Balsam poplar- Aspen/ Willow (6)
CPD7: Balsam poplar- Aspen/ Smooth brome (3)
CPD9: Balsam poplar/ Hazelnut- Red osier dogwood (2)
CPD5: Paper birch/ Canada buffaloberry (1)
CPD12: Balsam poplar/ Northern reed grass (2)

CPD6. Aspen-Balsam poplar/Saskatoon-Red osier dogwood-Snowberry

(Populus tremuloides-P. balsamifera/Amelanchier alnifolia-Cornus stolonifera-Symporicarpos)

n=6 This community type occurs on slopes on the edges of rivers and sloughs. Nutrient seepage occurs at some point in the growing season and the high water table favours the growth of red osier dogwood, saskatoon and balsam poplar. However, in sandy areas the soil surface drys very quickly and bearberry and juniper can be present in the community. Use by livestock will depend on the density of shrubs. Stands with a high shrub density have very little palatable forage available for domestic livestock and should be rated as non-use. In contrast more open stands have a good cover of grasses and forbs and should be considered secondary range.

Natural Subregion: CENTRAL PARKLAND

Ecosite: i Red osier dogwood (subhygric/rich)

Ecosite Phase: i3 deciduous

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Tree			
ASPEN *(Populus tremuloides)*	36	10-60	100
BALSAM POPLAR *(Populus balsamifera)*	16	0-60	67
Shrub			
CANADA BUFFALOBERRY *(Shepherdia canadensis)*	1	0-3	50
CHOKE CHERRY *(Prunus virginiana)*	3	0-8	83
NORTHERN GOOSEBERRY *(Ribes oxyacanthoides)*	1	0-6	50
PRICKLY ROSE *(Rosa acicularis)*	14	0-30	83
RED-OSIER DOGWOOD *(Cornus stolonifera)*	10	3-20	100
SASKATOON *(Amelanchier alnifolia)*	17	3-40	100
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	9	3-13	100
UNDIFFERENTIATED WILLOW *(Salix)*	2	0-5	87
Forb			
COMMON HORSETAIL *(Equisetum arvense)*	3	0-10	50
CREAM-COLORED VETCHLING *(Lathyrus ochroleucus)*	1	0-2	83
NORTHERN BEDSTRAW *(Galium boreale)*	2	0-6	83
STAR-FLOWERED SOLOMON'S-SEAL *(Smilacina stellata)*	2	0-7	67
TWINING HONEYSUCKLE *(Lonicera dioica)*	2	0-3	83
VEINY MEADOW RUE *(Thalictrum venulosum)*	2	0-10	67
WILD SARSAPARILLA *(Aralia nudicaulis)*	7	0-30	50
WILD VETCH *(Vicia americana)*	1	0-2	67
Grass			
BLUEJOINT *(Calamagrostis canadensis)*	2	0-10	33
HAY SEDGE *(Carex siccata)*	2	0-8	33

Environmental Variables

Moisture Regime: SUBHYGRIC()

Nutrient Regime: PERMESOTROPHIC()

Elevation (range): 830(670-934) M

Slope: 3 - 5(), 6 - 9(50), 10 - 15(50)

Aspect: Variable()

Soil Drainage: Moderate well drain()

Soil Subgroup:

Soil Series:

Soil Correlation: SCA 4, SCA 7

Range Site Category: Sb, Lo

Ecological Status Score: 25

LFH Statistics (cm)	**Mean**	**Min**	**Max**
Thickness (cm):	10.00	2.00	15.00
Litter:			

Soil Exposure	**Mean**	**Min**	**Max**
%:	0		
Comment:			

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb	152		
Grass	86		
Shrub	444		
Tree			
Total	682	0	0

Ecologically Sustainable Stocking Rate

2.69 (4.04-2.02) HA/AUM or *0.15 (0.10-0.20) AUM/AC*

CPD21. Balsam poplar-Aspen/Snowberry-Rose

(Populus balsamifera-Populus tremuloides/Symphoricarps-Rosa)

n=26 This community is similar to CPD6 (Aspen- Balsam poplar/ Saskatoon- Red osier dogwood- Snowberry) however it found in areas of greater moisture in subirrigated range sites with increased shrub cover. This is a secondary range site and not frequently chosen for grazing. When heavier grazing occurs it will cause the Kentucky bluegrass to increase causing a shift in the community to CPD8 (Balsam poplar- Aspen/ Snowberry/ Kentucky bluegrass). This community is frequently found in localized wetter areas, within complexes of dry uplands. This community is found in both SCA4 and SCA7. Soil series include; Gloucher (GHC), Widgeon (WDG), Peregrine (PGE), Alliance (ACE), Elnora (EOR), Bushy Head (BHD), Purpleford (PPF) and Kerensky (KSY). Soil textures are a wide range including clay loam, loam, silty loam, sandy loam, and loamy sand.

Natural Subregion: CENTRAL PARKLAND

Ecosite: i Red osier dogwood (subhygric/rich)

Ecosite Phase: i3 deciduous

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Tree			
ASPEN *(Populus tremuloides)*	21	1-45	100
BALSAM POPLAR *(Populus balsamifera)*	28	5-60	100
Shrub			
DEWBERRY *(Rubus pubescens)*	4	0-13	76
NORTHERN GOOSEBERRY *(Ribes oxyacanthoides)*	2	0-15	60
RED-OSIER DOGWOOD *(Cornus stolonifera)*	7	0-19	84
SASKATOON *(Amelanchier alnifolia)*	3	0-8	72
SNOWBERRY *(Symphoricarpos albus)*	12	6-20	100
UNDIFFERENTIATED ROSE *(Rosa)*	11	3-18	100
UNDIFFERENTIATED WILLOW *(Salix)*	3	0-6	64
WILD RED RASPBERRY *(Rubus idaeus)*	4	0-10	92
Forb			
FRINGED LOOSESTRIFE *(Lysimachia ciliata)*	1	0-6	72
LINDLEY'S ASTER *(Aster ciliolatus)*	2	0-10	80
NORTHERN BEDSTRAW *(Galium boreale)*	1	0-3	80
STAR-FLOWERED SOLOMON'S-SEAL *(Smilacina stellata)*	1	0-4	60
VEINY MEADOW RUE *(Thalictrum venulosum)*	2	0-4	84
WILD SARSAPARILLA *(Aralia nudicaulis)*	6	0-30	64
WILD STRAWBERRY *(Fragaria virginiana)*	1	0-4	64
WILD VETCH *(Vicia americana)*	1	0-3	52
Grass			
PURPLE OAT GRASS *(Schizachne purpurascens)*	1	0-5	56
UNDIFFERENTIATED SEDGE *(Carex)*	2	0-8	72

Environmental Variables

Moisture Regime: MESIC(), SUBHYGRIC()

Nutrient Regime: PERMESOTROPHIC()

Elevation (range): 668(610-713) M

Slope: 0 - 0.5(), 0.5 - 2.5(), 3 - 5(), 6 - 9(), 10 - 15(), 16 - 30()

Aspect: Variable()

Soil Drainage: Imperfectly drained()

Soil Subgroup: GLR.DB, GLR.BL, R.HG, GL.R

Soil Series: EOR, KSY, ACE, GHC, WDG, PGE, BHD, PPF

Soil Correlation: SCA 4, SCA 7

Range Site Category: Sb, Lo, Ov

Ecological Status Score: 20

LFH Statistics (cm)	Mean	Min	Max
Thickness (cm):	7.00	5.00	15.00
Litter:			

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	382	56	1793
Total	382.22	56.05	1793.44

Ecologically Sustainable Stocking Rate

2.38 (2.69-1.61) HA/AUM or *0.17 (0.15-0.25) AUM/AC*

CPD8. Balsam poplar-Aspen/Snowberry/Kentucky bluegrass

(Populus balsamifera-P. tremuloides/Symphoricarpos occidentalis/Poa pratensis)

n=2 This community type was described in Rochon Sands Provincial Park east of Red Deer. It represents a balsam poplar, saskatoon, red osier dogwood community that has been heavily grazed in the past. Heavy grazing reduces the cover of the understory layers and allows Kentucky bluegrass to become established. This community type is moderately productive for domestic livestock. However, the presence of this community type indicates that there maybe some livestock distribution problems that should be addressed on the disposition.

Natural Subregion: CENTRAL PARKLAND

Ecosite: i Red osier dogwood (subhygric/rich)

Ecosite Phase: i3 deciduous

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Tree			
ASPEN *(Populus tremuloides)*	12	3-20	100
BALSAM POPLAR *(Populus balsamifera)*	35	30-40	100
Shrub			
CHOKE CHERRY *(Prunus virginiana)*	5	1-10	100
PRICKLY ROSE *(Rosa acicularis)*	2	1-3	100
RED-OSIER DOGWOOD *(Cornus stolonifera)*	7	3-10	100
SASKATOON *(Amelanchier alnifolia)*	2	1-3	100
SILVERBERRY *(Elaeagnus commutata)*	15	10-20	100
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	5	1-10	100
Forb			
CANADA GOLDENROD *(Solidago canadensis)*	7	3-10	100
COMMON YARROW *(Achillea millefolium)*	1	1-1	100
SHOWY ASTER *(Aster conspicuus)*	2	0-3	50
STAR-FLOWERED SOLOMON'S-SEAL *(Smilacina stellata)*	2	1-3	100
Grass			
KENTUCKY BLUEGRASS *(Poa pratensis)*	30	20-40	100
NORTHERN REED GRASS *(Calamagrostis inexpansa)*	2	0-3	50
WIRE RUSH *(Juncus balticus)*	10	10-10	100

Environmental Variables

Moisture Regime: SUBHYGRIC()

Nutrient Regime: PERMESOTROPHIC()

Elevation (range): 787(-) M

Slope: 6 - 9()

Aspect: Variable()

Soil Drainage: Moderate well drain()

Soil Subgroup:

Soil Series:

Soil Correlation: SCA 9

Range Site Category: Sb

Ecological Status Score: 15

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

2.02 (2.69-1.61) HA/AUM or *0.20 (0.15-0.25) AUM/AC*

CPD11. Balsam poplar-Aspen/Willow

(Populus balsamifera-Populus balsamifera/Salix spp.)

n=6 This community type was described near Beaverhill lake as well as one site on Canadian Forces Bases Wainwright. It represents the transitional area between the upland forest and the willow and sedge dominated communities along the edges of fresh water lakes and sloughs. As the lake margin recedes and the water table drops balsam poplar and aspen will quickly invade into the edge of the various willow communities. As the tree cover increases there is a corresponding drop in the cover of willow and an increase shrub species that are more suited to better drainage such as saskatoon and snowberry. This community type produces a moderate amount of forage for domestic livestock, but the dense shrub cover limits access. This community type should be rated as secondary range.

Natural Subregion: CENTRAL PARKLAND

Ecosite: i Red osier dogwood (subhygric/rich)

Ecosite Phase: i3 deciduous

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Tree			
ASPEN *(Populus tremuloides)*	13	1-35	100
BALSAM POPLAR *(Populus balsamifera)*	43	27-85	100
Shrub			
SALIX SPECIES *(Salix spp.)*	9	3-16	100
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	2	0-5	67
Forb			
CANADA GOLDENROD *(Solidago canadensis)*	2	0-10	33
COMMON BLUE LETTUCE *(Lactuca pulchella)*	2	0-5	67
COMMON DANDELION *(Taraxacum officinale)*	1	0-1	83
COMMON FIREWEED *(Epilobium angustifolium)*	2	0-8	33
COMMON PINK WINTERGREEN *(Pyrola asarifolia)*	14	0-40	83
COMMON YARROW *(Achillea millefolium)*	1	0-1	67
NARROW-LEAVED HAWKWEED *(Hieracium umbellatum)*	1	0-1	50
PERENNIAL SOW-THISTLE *(Sonchus arvensis)*	1	0-2	67
WESTERN WILLOW ASTER *(Aster hesperius)*	1	0-2	50
WHITE CLOVER *(Trifolium repens)*	2	0-5	50
WHITE WINTERGREEN *(Pyrola elliptica)*	3	0-10	50
WILD STRAWBERRY *(Fragaria virginiana)*	2	0-5	67
Grass			
KENTUCKY BLUEGRASS *(Poa pratensis)*	9	0-20	83
UNDIFFERENTIATED REED GRASS *(Calamagrostis)*	2	0-10	50
UNDIFFERENTIATED SEDGE *(Carex)*	2	0-5	83
WIRE RUSH *(Juncus balticus)*	20	0-70	83

Environmental Variables

Moisture Regime: SUBHYGRIC()

Nutrient Regime: PERMESOTROPHIC()

Elevation (range): 670(-) M

Slope: 0 - 0.5()

Aspect: Variable()

Soil Drainage: Moderate well drain()

Soil Subgroup:

Soil Series:

Soil Correlation: SCA 4, SCA 10

Range Site Category: Sb

Ecological Status Score: 15

LFH Statistics (cm)	Mean	Min	Max
Thickness (cm):	12.00	7.00	15.00
Litter:			

Soil Exposure	Mean	Min	Max
%:	0		

Comment:

Forage Production (kg/ha) n=	Mean	Min	Max
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	1800		
Total	1800	0	0

Ecologically Sustainable Stocking Rate

2.02 (2.69-1.61) HA/AUM or *0.20 (0.15-0.25) AUM/AC*

CPD7. Balsam poplar-Aspen/Smooth brome

(Populus balsamifera-P. tremuloides/Bromus inermis)

n=3 This community type is similar to the previously described red osier dogwood, saskatoon dominated community type (CPD6), but has a high cover of smooth brome in the understory. Smooth brome is an introduced grass that can increase with increased grazing pressure, but smooth brome is also highly invasive and can invade into ungrazed areas where a seed source is present and moisture conditions are high. The invasion of non-native invaders onto the site makes this community moderately productive for domestic livestock.

Natural Subregion: CENTRAL PARKLAND

Ecosite: i Red osier dogwood (subhygric/rich)

Ecosite Phase: i3 deciduous

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Tree			
ASPEN *(Populus tremuloides)*	22	0-47	67
BALSAM POPLAR *(Populus balsamifera)*	27	10-35	100
WHITE SPRUCE *(Picea glauca)*	1	0-3	33
Shrub			
PRICKLY ROSE *(Rosa acicularis)*	2	1-3	100
RED-OSIER DOGWOOD *(Cornus stolonifera)*	2	0-3	67
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	4	0-10	67
UNDIFFERENTIATED WILLOW *(Salix)*	4	0-6	67
WILD RED RASPBERRY *(Rubus idaeus)*	2	0-5	33
Forb			
CANADA ANEMONE *(Anemone canadensis)*	1	0-3	33
CANADA GOLDENROD *(Solidago canadensis)*	2	1-3	100
COMMON BLUE LETTUCE *(Lactuca pulchella)*	1	0-2	67
COMMON DANDELION *(Taraxacum officinale)*	2	1-3	100
COMMON FIREWEED *(Epilobium angustifolium)*	1	0-1	67
COMMON PINK WINTERGREEN *(Pyrola asarifolia)*	10	0-30	33
NARROW-LEAVED HAWKWEED *(Hieracium umbellatum)*	1	0-2	67
ONE-SIDED WINTERGREEN *(Orthilia secunda)*	1	0-3	33
Grass			
AWNLESS BROME *(Bromus inermis)*	43	30-70	100
FOWL BLUEGRASS *(Poa palustris)*	1	0-3	33
KENTUCKY BLUEGRASS *(Poa pratensis)*	18	3-30	100
WIRE RUSH *(Juncus balticus)*	13	0-40	33

Environmental Variables

Moisture Regime: SUBHYGRIC()

Nutrient Regime: PERMESOTROPHIC()

Elevation (range): 753(670-920) M

Slope: 10 - 15()

Aspect: Variable()

Soil Drainage: Moderate well drain()

Soil Subgroup:

Soil Series:

Soil Correlation: SCA 7, SCA 10

Range Site Category: Sb

Ecological Status Score: 10

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

1.61 (2.02-1.34) HA/AUM or *0.25 (0.20-0.30) AUM/AC*

CPD9. Balsam poplar/Hazelnut-Red osier dogwood

(Populus balsamifera/Corylus cornuta-Cornus stolonifera)

n=2 This community type was described in the Wainwright Ecological Reserve near Wainwright. According to Coenen (2003) this community was quite limited in extent and occurred in lower or toe slope positions where seasonal moisture or seepage was present. Balsam poplar dominated this community although understory shrub cover was very high, typically exceeding 100% when combining the low, mid and tall shrub strata. Hazelnut was the dominant understory shrub, with red osier dogwood, saskatoon, high bush cranberry and snowberry also relatively common though with lower percent coverages. Wild sarsaparilla was the dominant forb with approximately 15 % cover. Despite the high productivity of this community type it should be rated as non-use for domestic livestock because of the dense shrub cover which restricts access.

Natural Subregion: CENTRAL PARKLAND

Ecosite: i Red osier dogwood (subhygric/rich)

Ecosite Phase: i3 deciduous

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Tree			
ASPEN *(Populus tremuloides)*	7	2-12	100
BALSAM POPLAR *(Populus balsamifera)*	45	40-50	100
Shrub			
BEAKED HAZELNUT *(Corylus cornuta)*	26	17-35	100
BEAKED WILLOW *(Salix bebbiana)*	6	2-10	100
HIGH-BUSH CRANBERRY *(Viburnum opulus)*	14	2-25	100
NORTHERN GOOSEBERRY *(Ribes oxyacanthoides)*	4	0-7	50
PRICKLY ROSE *(Rosa acicularis)*	6	5-7	100
RED-OSIER DOGWOOD *(Cornus stolonifera)*	16	7-25	100
SNOWBERRY *(Symphoricarpos albus)*	1	0-2	50
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	2	1-2	100
WATER BIRCH *(Betula occidentalis)*	1	0-2	50
Forb			
COMMON PINK WINTERGREEN *(Pyrola asarifolia)*	1	1-1	100
CREAM-COLORED VETCHLING *(Lathyrus ochroleucus)*	2	1-3	100
DEWBERRY *(Rubus pubescens)*	4	2-5	100
TWINFLOWER *(Linnaea borealis)*	1	0-2	50
VEINY MEADOW RUE *(Thalictrum venulosum)*	4	2-5	100
WESTERN CANADA VIOLET *(Viola canadensis)*	1	0-2	50
WILD SARSAPARILLA *(Aralia nudicaulis)*	15	15-15	100
Grass			
WHITE-GRAINED MOUNTAIN RICE GRASS *(Oryzopsis asperifolia)*	1	1-1	100

Environmental Variables

Moisture Regime: SUBHYGRIC()

Nutrient Regime: PERMESOTROPHIC()

Elevation (range): 689(-) M

Slope: 6 - 9()

Aspect: Southerly()

Soil Drainage: Moderate well drain()

Soil Subgroup:

Soil Series:

Soil Correlation: SCA 4, SCA 7

Range Site Category: Sb

Ecological Status Score: 25

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

2.69 (4.04-1.34) HA/AUM or *0.15 (0.10-0.30) AUM/AC*

CPD5. Paper birch/Canada buffaloberry

(Betula papyrifera/Shepherdia canadensis)

n=1 This community type was described in Dry Island Buffalo Jump Provincial Park. It represents an area of the river bank that has slumped and has succeeded back to paper birch and buffaloberry. Below this community type is a seepage area that is dominated by balsam poplar and red osier dogwood.

Natural Subregion: CENTRAL PARKLAND

Ecosite: i Red osier dogwood (subhygric/rich)

Ecosite Phase: i3 deciduous

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Tree			
ASPEN *(Populus tremuloides)*	3	3-3	100
WHITE BIRCH *(Betula papyrifera)*	50	50-50	100
Shrub			
CANADA BUFFALOBERRY *(Shepherdia canadensis)*	10	10-10	100
CHOKE CHERRY *(Prunus virginiana)*	3	3-3	100
LOW-BUSH CRANBERRY *(Viburnum edule)*	3	3-3	100
PRICKLY ROSE *(Rosa acicularis)*	3	3-3	100
RED-OSIER DOGWOOD *(Cornus stolonifera)*	3	3-3	100
SASKATOON *(Amelanchier alnifolia)*	3	3-3	100
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	3	3-3	100
Forb			
CREAM-COLORED VETCHLING *(Lathyrus ochroleucus)*	1	1-1	100
FAIRYBELLS *(Disporum trachycarpum)*	3	3-3	100
TWINING HONEYSUCKLE *(Lonicera dioica)*	3	3-3	100
WILD SARSAPARILLA *(Aralia nudicaulis)*	3	3-3	100
Grass			
AWNLESS BROME *(Bromus inermis)*	3	3-3	100
SPRENGEL'S SEDGE *(Carex sprengelii)*	3	3-3	100

Environmental Variables

Moisture Regime: SUBHYGRIC()

Nutrient Regime: PERMESOTROPHIC()

Elevation (range): 723(-) M

Slope: 6 - 9()

Aspect: Southerly()

Soil Drainage: Well drained()

Soil Subgroup:

Soil Series:

Soil Correlation: SCA 7

Range Site Category: Sb, LtcD

Ecological Status Score: 25

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

4.04 (40.46-2.02) HA/AUM or *0.10 (0.01-0.20) AUM/AC*

CPD12. Balsam poplar/Northern reed grass

(Populus balsamifera/Calamagrostis inexpansa)

n=2 This community type was described near Rochon Sands Provincial Park and represents the transitional area between the upland forest and sedge dominated communities along the edges of freshwater lakes and sloughs. As the lake margin recedes and the water table drops balsam poplar will quickly invade into the edge of the various riparian communities. This community type produces a moderate amount of forage for domestic livestock, but the wet substrate will limit access to livestock.

Natural Subregion: CENTRAL PARKLAND

Ecosite: i Red osier dogwood (subhygric/rich)

Ecosite Phase: i3 deciduous

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Tree			
ASPEN *(Populus tremuloides)*	2	1-3	100
BALSAM POPLAR *(Populus balsamifera)*	45	20-70	100
Shrub			
RED-OSIER DOGWOOD *(Cornus stolonifera)*	1	1-1	100
SALIX SPECIES *(Salix spp.)*	4	1-7	100
Forb			
PERENNIAL SOW-THISTLE *(Sonchus arvensis)*	10	10-10	100
SILVERWEED *(Potentilla anserina)*	2	0-3	50
YELLOW SWEET-CLOVER *(Melilotus officinalis)*	2	0-3	50
Grass			
KENTUCKY BLUEGRASS *(Poa pratensis)*	17	3-30	100
NORTHERN REED GRASS *(Calamagrostis inexpansa)*	35	30-40	100
THREE-SQUARE RUSH *(Scirpus pungens)*	10	0-20	50
WIRE RUSH *(Juncus balticus)*	5	0-10	50
WOOLLY SEDGE *(Carex lanuginosa)*	2	1-3	100

Environmental Variables

Moisture Regime: HYGRIC()

Nutrient Regime: PERMESOTROPHIC()

Elevation (range): 730(-) M

Slope: 0 - 0.5()

Aspect: Level()

Soil Drainage: Poorly drained()

Soil Subgroup:

Soil Series:

Soil Correlation: SCA 9, SCA 10

Range Site Category: Sb

Ecological Status Score: 25

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

2.02 (4.04-1.61) HA/AUM or *0.20 (0.10-0.25) AUM/AC*

9.9.3 Red osier dogwood (subhygric/ rich): Conifer

Characteristic Species:

Tree: White spruce,
Shrub: Wild red raspberry, Snowberry, Beaked hazelnut, Red osier dogwood
Grass: Two- seeded sedge

Community Types:

CPE1: White spruce/ Balsam poplar/ Red osier dogwood- Rose (3)

CPE1. White spruce/Balsam poplar/Red osier dogwood-Rose

(Picea glauca/Populus tremuloides/Cornus stolonifera-Rosa)

n=3 This community type was described by Thompson and Hansen (2002) adjacent to the Red Deer River east of the city of Red Deer. These sites represent terraces above the river that have undergone succession from shrubland dominated communities. In the absence of disturbance this community type will eventually succeed to a white spruce dominated community type. The presence of red osier dogwood indicates the climax nature of the community type. Heavy livestock grazing will cause willow and red osier dogwood to decline and the understory will often become dominated by Kentucky bluegrass and timothy.

Natural Subregion: CENTRAL PARKLAND

Ecosite: i Red osier dogwood (subhygric/rich)

Ecosite Phase: i4 conifer

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Tree			
UNDIFFERENTIATED ASPEN & BALSAM POPLAR *(Populus)*	27	10-40	100
WHITE SPRUCE *(Picea glauca)*	14	3-30	100
Shrub			
CHOKE CHERRY *(Prunus virginiana)*	5	3-10	100
DEWBERRY *(Rubus pubescens)*	2	0-3	67
PRICKLY ROSE *(Rosa acicularis)*	23	20-30	100
RED-OSIER DOGWOOD *(Cornus stolonifera)*	10	10-10	100
SASKATOON *(Amelanchier alnifolia)*	4	0-10	67
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	8	3-10	100
WILD RED RASPBERRY *(Rubus idaeus)*	8	1-20	100
Forb			
COMMON HORSETAIL *(Equisetum arvense)*	1	0-3	67
PALMATE-LEAVED COLTSFOOT *(Petasites palmatus)*	2	0-3	67
SHOWY ASTER *(Aster conspicuus)*	1	0-3	67
STAR-FLOWERED SOLOMON'S-SEAL *(Smilacina stellata)*	2	1-3	100
TWINING HONEYSUCKLE *(Lonicera dioica)*	2	1-3	33
WILD LILY-OF-THE-VALLEY *(Maianthemum canadense)*	1	0-3	33
WILD SARSAPARILLA *(Aralia nudicaulis)*	7	0-10	100
WILD STRAWBERRY *(Fragaria virginiana)*	1	0-3	67
Grass			
BLUEJOINT *(Calamagrostis canadensis)*	10	0-20	67
KENTUCKY BLUEGRASS *(Poa pratensis)*	1	0-3	33
PURPLE OAT GRASS *(Schizachne purpurascens)*	3	0-10	33

Environmental Variables

Moisture Regime: SUBHYGRIC()

Nutrient Regime: PERMESOTROPHIC()

Elevation (range): 910(-) M

Slope: 3 - 5()

Aspect: Variable()

Soil Drainage: Moderate well drain()

Soil Subgroup:

Soil Series:

Soil Correlation: SCA 9

Range Site Category: Sb, LtcC

Ecological Status Score: 25

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

2.69 (8.09-2.02) HA/AUM or *0.15 (0.05-0.20) AUM/AC*

9.10 Foxtail barley (subhygric/ medium to poor- j)

General Description: This ecological site represents a moisture regime that is subhygric and a nutrient regime that is medium to poor throughout the Central Parkland. Tree and shrub species are generally not found in this ecological site because of a higher moisture regime. Generally these sites are dominated by foxtail barley.

Successional Relationships: The reference plant community for this ecological site is presently not well understood.

Indicator/ Characteristic species: Foxtail barley, Garrison creeping foxtail, Baltic rush, Perennial sow- thistle, Dandelion

Site Characteristics:

Moisture Regime: Subhygric, Mesic, Hygric
Nutrient Regime: Submesotrophic, Mesotrophic, Eutrophic
Topographic Position: Level
Slope: 0- 0.5%
Aspect: Level

Soil Characteristics:

Organic Thickness: 0- 15 cm
Surface Texture: L, LS, SL
Soil Drainage: Well drained, Moderately well drained, Imperfectly drained, Poorly drained, Very poorly drained
Soil Subgroup: O.BL, O.HG, O.R, R.G

9.10 Foxtail barley (subhygric/ medium to poor): Grassland

Community Types:
CPA18: Garrison creeping foxtail (8)
CPA28: Garrison creeping foxtail/ Canada thistle (8)
CPA30: Kentucky bluegrass- Baltic rush/ Clover- Dandelion (8)
CPA29: Kentucky bluegrass- Baltic rush/ Perennial sow- thistle (12)
CPA19: Foxtail barley (9)
CPA24: Marsh ragwort (4)

CPA18. Garrison creeping foxtail

(Alopecurus arundinaceus)

n=8 Garrison creeping foxtail was seeded in the 1980's around Beaverhill Lake to see if it would compete against and replace foxtail barley. The competitive and aggressive nature of this species has resulted in a monoculture of the Garrison creeping foxtail establishing on the former lakebed lands since the waters of Beaverhill Lake have receded. Garrison creeping foxtail is a palatable grass, making it a favorable species for grazing, especially in the fall. It is also cut for hay production. Garrison creeping foxtail can survive periods of inundation of water in the early spring and will grow in shallow water in the summer. It has a moderate tolerance for alkaline conditions. As you move to upland or to drier sites, garrison communities are replaced by Kentucky Blue grass communities.

Natural Subregion: CENTRAL PARKLAND

Ecosite: j Foxtail Barley (subhygric/medium)

Ecosite Phase: j1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Forb			
CANADA THISTLE *(Cirsium arvense)*	3	0-6	67
PERENNIAL SOW-THISTLE *(Sonchus arvensis)*	3	0-14	44
Grass			
FOXTAIL BARLEY *(Hordeum jubatum)*	1	0-9	33
UNDIFFERENTIATED FOXTAIL *(Alopecurus)*	79	66-87	100

Environmental Variables

Moisture Regime: SUBHYGRIC()

Nutrient Regime: SUBMESOTROPHIC()

Elevation (range): 673(669-675) M

Slope: 0 - 0.5()

Aspect: Level()

Soil Drainage: Moderate well drain(), Imperfectly drained(), Poorly drained()

Soil Subgroup: O.BL, O.HG, O.R

Soil Series: GUR, MDR, ZGW, ZUN, ZWA

Soil Correlation: SCA 10

Range Site Category: Sb

Ecological Status Score:

Soil Exposure

	Mean	**Min**	**Max**
%:	1	0	3

Comment:

Forage Production (kg/ha) n=9

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	4785	2290	7043
Total	4784.94	2290.49	7043.06

Ecologically Sustainable Stocking Rate

0.33 (0.50-0.20) HA/AUM or *1.23 (0.81-2.02) AUM/AC*

CPA28. Garrison creeping foxtail/Canada thistle

(Alopecurus arundinaceus/Cirsium arvense)

n=8 Garrison creeping foxtail was seeded in the 1980's around Beaverhill Lake to compete against and replace foxtail barley. It has become quite invasive around the lake as well as Canada thistle. Garrison creeping foxtail will survive periods of complete inundation of water in early spring and fall and will grow in shallow water during summer. It has moderate tolerance for alkaline conditions. It is considered a palatable grass, and at comparative growth stages cattle usually prefer grazing creeping foxtail to reed canary grass. This is especially true during the fall months. As you move upland to drier sites Garrison creeping foxtail is replaced by Kentucky bluegrass. Thistle was an early successional species that established as the lake dried up and its presence cannot be completely associated with grazing disturbance.

Natural Subregion: CENTRAL PARKLAND

Ecosite: j Foxtail Barley (subhygric/medium)

Ecosite Phase: j1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Forb			
CANADA THISTLE *(Cirsium arvense)*	5	0-26	89
PERENNIAL SOW-THISTLE *(Sonchus arvensis)*	5	0-20	56
Grass			
FOXTAIL BARLEY *(Hordeum jubatum)*	2	0-8	78
UNDIFFERENTIATED FOXTAIL *(Alopecurus)*	72	47-85	100

Environmental Variables

Moisture Regime: SUBHYGRIC()

Nutrient Regime: SUBMESOTROPHIC()

Elevation (range): (-) M

Slope: 0 - 0.5()

Aspect: Level()

Soil Drainage: Moderate well drain(), Imperfectly drained()

Soil Subgroup: O.BL, O.HG, O.R

Soil Series: GUR, MDR, ZGW, ZUN, ZWA

Soil Correlation: SCA 10

Range Site Category: Sb

Ecological Status Score:

Soil Exposure

	Mean	**Min**	**Max**
%:	0	0	2

Comment:

Forage Production (kg/ha) n=8

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	3396	2388	5100
Total	3395.83	2388.26	5099.74

Ecologically Sustainable Stocking Rate

0.50 (0.80-0.27) HA/AUM or *0.81 (0.51-1.50) AUM/AC*

CPA30. Kentucky bluegrass-Baltic rush/Clover-Dandelion

(Poa pratensis-Juncus balticus/Trifolium repens-Taraxacum officinale)

n=8 This plant community is found around Beaverhill Lake on the former beach upland and on drier sites on the old lakebed. This is what is being observed as the climax plant community around the lake on the upland and drier areas of the former lakebed. As you move into sites with more moisture, Garrison creeping foxtail starts to become present. Heavy grazing results in decreased grass cover and can increase the amount of ground cover from species such as Antennaria. Litter is generally low to moderate and bare soil is to be expected depending on how the observed area has vegetated since the lake began to dry and the impact grazing has had on vegetation establishment and succession. In areas of heavy grazing, a lawn appearance of Kentucky bluegrass can be observed.

Natural Subregion: CENTRAL PARKLAND

Ecosite: j Foxtail Barley (subhygric/medium)

Ecosite Phase: j1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Forb			
ASTER SPECIES *(Aster spp.)*	1	0-3	38
CANADA THISTLE *(Cirsium arvense)*	2	0-6	50
COMMON DANDELION *(Taraxacum officinale)*	14	0-30	88
PERENNIAL SOW-THISTLE *(Sonchus arvensis)*	2	0-5	75
SILVERWEED *(Potentilla anserina)*	3	0-22	50
UNDIFFERENTIATED EVERLASTINGS *(Antennaria)*	7	0-41	25
WHITE CLOVER *(Trifolium repens)*	15	0-54	75
Grass			
KENTUCKY BLUEGRASS *(Poa pratensis)*	60	37-70	100
UNDIFFERENTIATED SEDGE *(Carex)*	4	0-24	50
WIRE RUSH *(Juncus balticus)*	10	4-18	100

Environmental Variables

Moisture Regime: SUBHYGRIC()

Nutrient Regime: SUBMESOTROPHIC()

Elevation (range): 665(664-668) M

Slope: 0 - 0.5()

Aspect: Level()

Soil Drainage: Well drained()

Soil Subgroup: O.HG

Soil Series: ZWA

Soil Correlation: SCA 10

Range Site Category: Sb

Ecological Status Score:

Soil Exposure	**Mean**	**Min**	**Max**
%:	2	0	7

Comment:

Forage Production (kg/ha) n=8

	Mean	**Min**	**Max**
Forb	590	100	1820
Grass	2429	1812	3268
Shrub			
Tree			
Total	3018.52	1911.4	5087.76

Ecologically Sustainable Stocking Rate

1.01 (2.02-0.67) HA/AUM or *0.40 (0.20-0.60) AUM/AC*

CPA29. Kentucky bluegrass-Baltic rush/Perennial sow-thistle

(Poa pratensis-Juncus balticus/Sonchus arvensis)

n=12 This plant community is found around Beaverhill Lake on sites that occupy the old lake bed. It is also found around wetlands with receding water levels. It is an early successional plant community that establishes on areas that are drier. Bare ground is prominent and to be expected due to a combination of the early successional state (and associated vegetation) and the influence of moderate to heavy grazing occurring at the same time as establishment and succession. Litter layer can be absent or poorly developed. Thistle is an early successional species that established as the lake dried up and its presence cannot be completely associated with grazing disturbance.

Natural Subregion: CENTRAL PARKLAND

Ecosite: j Foxtail Barley (subhygric/medium)

Ecosite Phase: j1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Forb			
CANADA THISTLE *(Cirsium arvense)*	5	0-21	75
COMMON DANDELION *(Taraxacum officinale)*	2	0-8	67
COMMON YARROW *(Achillea millefolium)*	1	0-7	42
PERENNIAL SOW-THISTLE *(Sonchus arvensis)*	6	0-13	92
SILVERWEED *(Potentilla anserina)*	5	0-47	50
WHITE CLOVER *(Trifolium repens)*	3	0-18	50
Grass			
AWNED SEDGE *(Carex atherodes)*	1	0-12	33
KENTUCKY BLUEGRASS *(Poa pratensis)*	78	65-86	100
UNDIFFERENTIATED FOXTAIL *(Alopecurus)*	1	0-4	33
UNDIFFERENTIATED SEDGE *(Carex)*	3	0-8	75
WIRE RUSH *(Juncus balticus)*	7	0-27	83

Environmental Variables

Moisture Regime: MESIC()

Nutrient Regime: SUBMESOTROPHIC()

Elevation (range): 673(667-676) M

Slope: 0 - 0.5()

Aspect: Level()

Soil Drainage: Well drained()

Soil Subgroup: O.HG

Soil Series: MDR, ZGW, ZWA

Soil Correlation: SCA 10

Range Site Category: Sb

Ecological Status Score: 8

Soil Exposure	**Mean**	**Min**	**Max**
%:	1	0	6

Comment:

Forage Production (kg/ha) n=12

	Mean	**Min**	**Max**
Forb	315	28	988
Grass	2509	1304	3434
Shrub			
Tree			
Total	2823.5	1332	4422

Ecologically Sustainable Stocking Rate

1.34 (2.02-0.67) HA/AUM or *0.30 (0.20-0.60) AUM/AC*

CPA19. Foxtail barley

(Hordeum jubatum)

n=9 This community is described for Beaverhill Lake and on sites where a monoculture of foxtail barley has formed as an early successional plant community. If there is a seed source foxtail barley and thistle will readily grow in the bare ground left by the receding water as the lake bed dries up. The foxtail barley in this community produces large amounts of forage however has limited use in accessing the full potential of the forage produced. Depending on the timing of grazing it may have no grazing value due to the palatability of the foxtail barley if it has headed out. Furthermore early grazing (which would be encouraged to capture the forage) might not be encouraged or access reduced due to wet soils that might be present. A similar foxtail barley plant community can also form nearly pure stands comprising almost 100% of the vegetative cover under heavy grazing pressure.

Natural Subregion: CENTRAL PARKLAND

Ecosite: j Foxtail Barley (subhygric/medium)

Ecosite Phase: j1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Forb			
CANADA THISTLE *(Cirsium arvense)*	1	0-4	44
PERENNIAL SOW-THISTLE *(Sonchus arvensis)*	1	0-4	44
Grass			
FOXTAIL BARLEY *(Hordeum jubatum)*	74	46-96	100
UNDIFFERENTIATED FOXTAIL *(Alopecurus)*	1	0-4	56

Environmental Variables

Moisture Regime: SUBHYGRIC()

Nutrient Regime: SUBMESOTROPHIC(), MESOTROPHIC(), EUTROPHIC()

Elevation (range): 671(668-674) M

Slope: 0 - 0.5()

Aspect: Level()

Soil Drainage: Poorly drained()

Soil Subgroup: R.G

Soil Series: ZGW, ZNA, ZWA

Soil Correlation: SCA 10

Range Site Category: Sa, Sb, SL

Ecological Status Score: 15

Soil Exposure

	Mean	**Min**	**Max**
%:	1	0	10

Comment:

Forage Production (kg/ha) n=8

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	3086		
Total	3086	0	0

Ecologically Sustainable Stocking Rate

0.67 (4.00-0.40) HA/AUM or *0.60 (0.10-1.01) AUM/AC*

CPA24. Marsh ragwort

(Senecio congestus)

n=4 This community can be found occupying land exposed by receding water levels. During high water levels marsh ragwort will increase, however as water levels recede foxtail barley and Rumex will increase. Increases of Kentucky bluegrass can occur within this community type after heavy livestock disturbance.

Natural Subregion: CENTRAL PARKLAND

Ecosite: j Foxtail Barley (subhygric/medium)

Ecosite Phase: j1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Forb			
COMMON CATTAIL *(Typha latifolia)*	1	0-1	50
GOLDEN DOCK *(Rumex maritimus)*	5	1-10	100
MARSH RAGWORT *(Senecio congestus)*	68	1-90	100
OAK-LEAVED GOOSEFOOT *(Chenopodium salinum)*	3	1-5	75
RAYLESS ASTER *(Aster brachyactis)*	3	1-5	75
RED GOOSEFOOT *(Chenopodium rubrum)*	1	0-2	50
SEASIDE BUTTERCUP *(Ranunculus cymbalaria)*	2	0-5	75
Grass			
FOXTAIL BARLEY *(Hordeum jubatum)*	4	1-5	100

Environmental Variables

Moisture Regime: SUBHYGRIC(), HYGRIC()

Nutrient Regime: SUBMESOTROPHIC(), MESOTROPHIC(), EUTROPHIC()

Elevation (range): (-) M

Slope: 0 - 0.5()

Aspect: Level()

Soil Drainage: Poorly drained(), Very poorly drained()

Soil Subgroup: R.G

Soil Series: ZWA

Soil Correlation: SCA 10

Range Site Category: Len

Ecological Status Score: 40

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=35

	Mean	**Min**	**Max**
Forb	376		
Grass	6753		
Shrub			
Tree			
Total	7129.1	0	0

Ecologically Sustainable Stocking Rate

4.04 (8.09-2.69) HA/AUM or *0.10 (0.05-0.15) AUM/AC*

9.11 Horsetail (hygric/ rich- k)

General Description: The horsetail ecosite is wet and nutrient rich. These sites are commonly found on fluvial or glaciolacustrine parent materials where flooding or seepage enhances the substrate nutrient supply. With high water tables, wet soil conditions, and Gleysolic soils, organic matter tends to accumulate. Horsetails commonly form a blanket over the forest floor.

Successional Relationships: Succession on these sites is largely controlled by high soil water content. Some sites that have peaty soils may have taken hundreds of years to develop. When the trees are removed, the water table may rise making tree establishment difficult. White spruce forms the canopy in the last successional stage.

Indicator species: Balsam poplar, White spruce, Red osier dogwood, Horsetail, Cow parsnip

Site Characteristics:

Moisture Regime: Hygric
Nutrient Regime: Permesotrophic
Topographic Position: Level
Slope: 0- 0.5%
Aspect: Level

Soil Characteristics:

Organic Thickness: 0- 39 cm
Surface Texture: CL, Si, SiC, SiL
Soil Drainage: Moderately well drained
Soil Subgroup: O.G, O.LG, CU.R, GLCU.R

9.11.1 Horsetail (hygric/ rich): Deciduous

Characteristic Species:

Tree: Balsam poplar, Aspen, White spruce
Shrub: Red osier dogwood
Forb: Common horsetail, Cow parsnip
Grass: Bluejoint

Community Types:

CPD10: Balsam poplar- Aspen/ Red osier dogwood/ Horsetail (6)

CPD10. Balsam poplar-Aspen/Red osier dogwood/Horsetail

(Populus balsamifera-P. tremuloides/Cornus stolonifera/Equisetum arvense)

n=6 This community type is typical of river slopes, old creek channels or river flood plains or where moisture and nutrients are quite high. This community type can eventually succeed to white spruce in the absence of disturbance. Increased disturbance by livestock would cause snowberry, smooth brome and Kentucky bluegrass to increase. This community type is moderately productive for domestic livestock, but these areas must be managed with care because livestock will tend to congregate in these community types.

Natural Subregion: CENTRAL PARKLAND

Ecosite: k Horsetail (hygric/rich)

Ecosite Phase: k3 deciduous

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Tree			
ASPEN *(Populus tremuloides)*	27	0-80	83
BALSAM POPLAR *(Populus balsamifera)*	38	6-60	100
Shrub			
CHOKE CHERRY *(Prunus virginiana)*	8	1-30	100
DEWBERRY *(Rubus pubescens)*	3	0-6	83
LOW-BUSH CRANBERRY *(Viburnum edule)*	6	0-20	67
PRICKLY ROSE *(Rosa acicularis)*	15	0-20	83
RED-OSIER DOGWOOD *(Cornus stolonifera)*	18	3-60	100
SASKATOON *(Amelanchier alnifolia)*	8	1-20	100
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	9	3-20	100
UNDIFFERENTIATED WILLOW *(Salix)*	6	1-12	100
Forb			
COMMON DANDELION *(Taraxacum officinale)*	1	0-3	83
COMMON FIREWEED *(Epilobium angustifolium)*	1	0-6	67
COMMON HORSETAIL *(Equisetum arvense)*	22	10-40	100
COMMON PINK WINTERGREEN *(Pyrola asarifolia)*	1	0-2	100
COW PARSNIP *(Heracleum lanatum)*	2	0-10	67
STAR-FLOWERED SOLOMON'S-SEAL *(Smilacina stellata)*	1	0-3	83
TWINING HONEYSUCKLE *(Lonicera dioica)*	1	0-3	67
VEINY MEADOW RUE *(Thalictrum venulosum)*	1	0-3	83
WILD VETCH *(Vicia americana)*	1	0-3	67
Grass			
BLUEJOINT *(Calamagrostis canadensis)*	5	0-10	83

Environmental Variables

Moisture Regime: HYGRIC()

Nutrient Regime: PERMESOTROPHIC()

Elevation (range): 750(690-910) M

Slope: 0 - 0.5()

Aspect: Variable()

Soil Drainage: Moderate well drain()

Soil Subgroup:

Soil Series:

Soil Correlation: SCA 9

Range Site Category: Sb, Ov, Ltn

Ecological Status Score: 25

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb	18		
Grass	32		
Shrub	702		
Tree			
Total	752	0	0

Ecologically Sustainable Stocking Rate

2.69 (4.04-2.02) HA/AUM or *0.15 (0.10-0.20) AUM/AC*

9.11.2 Horsetail (hygric/ rich): Conifer

Characteristic Species:

Tree: White spruce, Balsam poplar
Shrub: Red osier dogwood
Forb: Common horsetail, Palmate- leaved coltsfoot, Cow parsnip
Grass: Two- seeded sedge

Community Types:
CPE3: White spruce/ Horsetail (2)

CPE3. White spruce/Horsetail

(Picea glauca/Equisetum arvense)

n=2 This community type represents one of the wettest and most nutrient-rich forest conditions in the Central Parkland Natural Subregion. This community type is usually associated with moist areas along the edges of streams and rivers, but seepage and high water tables can also be expected. The high nutrient levels result in a high diversity of shrub and forb layers. Generally, there is little palatable forage for domestic livestock and this community should be rated non-use.

Natural Subregion: CENTRAL PARKLAND

Ecosite: k Horsetail (hygric/rich)

Ecosite Phase: k4 conifer

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Tree			
UNDIFFERENTIATED ASPEN & BALSAM POPLAR *(Populus)*	1	1-1	100
WHITE SPRUCE *(Picea glauca)*	80	80-80	100
Shrub			
PRICKLY ROSE *(Rosa acicularis)*	3	3-3	100
RED-OSIER DOGWOOD *(Cornus stolonifera)*	3	3-3	100
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	2	1-3	100
Forb			
BALSAM GROUNDSEL *(Senecio pauperculus)*	2	0-3	50
BISHOP'S-CAP *(Mitella nuda)*	2	0-3	50
COMMON DANDELION *(Taraxacum officinale)*	2	1-3	100
COMMON HORSETAIL *(Equisetum arvense)*	35	30-40	100
DWARF SCOURING-RUSH *(Equisetum scirpoides)*	5	0-10	50
PALMATE-LEAVED COLTSFOOT *(Petasites palmatus)*	7	3-10	100
STAR-FLOWERED SOLOMON'S-SEAL *(Smilacina stellata)*	2	0-3	50
TWINING HONEYSUCKLE *(Lonicera dioica)*	2	0-3	50
UNDIFFERENTIATED MILK VETCH *(Astragalus)*	1	1-1	100
WILD STRAWBERRY *(Fragaria virginiana)*	1	1-1	100
WILD WHITE GERANIUM *(Geranium richardsonii)*	1	1-1	100
Grass			
KENTUCKY BLUEGRASS *(Poa pratensis)*	2	0-3	50
UNDIFFERENTIATED SEDGE *(Carex)*	1	0-2	50

Environmental Variables

Moisture Regime: HYGRIC()

Nutrient Regime: PERMESOTROPHIC()

Elevation (range): 723(-) M

Slope: 0 - 0.5()

Aspect: Level()

Soil Drainage: Moderate well drain()

Soil Subgroup:

Soil Series:

Soil Correlation: SCA 9

Range Site Category: Ltn, Sb

Ecological Status Score: 25

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

8.09 (40.00-4.04) HA/AUM or *0.05 (0.01-0.10) AUM/AC*

9.12 Saline Lowlands (hygric/ poor- l)

General Description: The saline lowland ecological site has a nutrient-poor substrate with imperfectly to very poorly drained soils. This ecological site applies to all salt enriched soils including Chernozemic, Regosolic and Gleysolic soil subgroups. Widgeon grass and Samphire salt flats are all indicative of these saline and alkaline conditions at the soil surface.

Successional Relationships: Saline phase soils have an electrical conductivity that inhibits most plant growth. The chemical nature of the site often makes these grassland communities the climax vegetation on the site.

Indicator species: Salt grass, Foxtail barley, Wire rush, Nuttall's salt meadow grass

Site Characteristics:

Moisture Regime: Hygric, Subhygric, Mesic, Subhydric, Submesic
Nutrient Regime: Permesotrophic, Submesotrophic, Mesotrophic
Topographic Position: Level
Slope: 0- 15
Aspect: Variable

Soil Characteristics:

Organic Thickness: 0- 5 cm
Surface Texture: C, CL, SCL
Soil Drainage: Moderately well drained, Imperfectly drained, Poorly drained
Soil Subgroup: O.DB, O.HG, O.R, O.B, R.DB, O.BL, BL.SS, B.SO, O.DG

9.12.1 Saline Lowlands (hygric/ poor): Grassland

Community Types:
CPA40 Baltic rush- Salt grass (6)
CPA41: Foxtail barley- Nuttall's salt meadow grass (6)
CPA42: Salt grass- Foxtail barley- Nuttall's salt meadow grass (18)
CPA43: Salt grass- Foxtail barley (5)
CPA44: Awned wheat grass- Salt grass (7)
CPA45: Alkali cordgrass- Baltic rush (5)
CPA20: Kentucky Bluegrass- Salt grass (4)
CPA13: Three square rush (3)
COND14: Samphire salt flats (1)

CPA40. Baltic rush-Salt grass

(Juncus Balticus- Distichlis stricta)

n=6 This alkali community is found in the Wainwright area (i.e. Reflex Lake and Horseshoe Lake) which occupies a very specific band small band of area. Out of all the plant communities in the alkali complex, it occupies subirrigated and/ or the wettest area (predominately water coming from the surface). This microsite with water seepage or inflow of a spring will frequently have a dense cover of Baltic rush. As the rush cover decreases (due to area becoming drier) the salt grass becomes more abundant. This community can be found in areas of small rocks and pebbles. The Baltic rush- salt grass community is palatable and readily grazed.

Natural Subregion: CENTRAL PARKLAND

Ecosite: I Saline Lowlands (hygric/poor)

Ecosite Phase: I1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Forb			
SEA MILKWORT *(Glaux maritima)*	2	0-6	50
Grass			
FOXTAIL BARLEY *(Hordeum jubatum)*	3	0-14	50
NUTTALL'S SALT-MEADOW GRASS *(Puccinellia nuttalliana)*	9	0-34	50
SALT GRASS *(Distichlis stricta)*	7	1-18	100
WIRE RUSH *(Juncus balticus)*	40	20-62	100

Environmental Variables

Moisture Regime: SUBHYGRIC()

Nutrient Regime: SUBMESOTROPHIC(), MESOTROPHIC()

Elevation (range): 654(600-675) M

Slope: 0 - 0.5()

Aspect: Level(), Easterly()

Soil Drainage: Poorly drained()

Soil Subgroup: O.DB, O.HG, O.R

Soil Series: MET, ZGW, ZWA

Soil Correlation: SCA 4, SCA 7, SCA 10

Range Site Category: SL, LenA, Sb, Sa

Ecological Status Score: 40

Soil Exposure

	Mean	**Min**	**Max**
%:	16	0	38

Comment:

Forage Production (kg/ha) n=6

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	1520	1038	1967
Total	1519.9	1037.5	1967.3

Ecologically Sustainable Stocking Rate

2.02 (4.04-1.61) HA/AUM or *0.20 (0.10-0.25) AUM/AC*

CPA41. Foxtail barley-Nuttall salt-meadow grass

(Hordeum jubatum-Puccinellia nuttalliana)

n=6 This alkali community is throughout the Central Parkland; particularly near Wainwright (i.e. Sunken Lake), Camrose (i.e. Bittern Lake), and the Red Deer area. This community is frequently found in areas of wet soil or water levels of less than 1cm and appears to be an early colonizing community as the water recedes. Both dominant species (Nuttall's salt-meadow grass and foxtail barley) will grow on raised pedestals. The Nuttall's salt- meadow grass will be grazed by livestock, however the foxtail only if seed heads are not yet produced.

Natural Subregion: CENTRAL PARKLAND

Ecosite: I Saline Lowlands (hygric/poor)

Ecosite Phase: I1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Forb			
COMMON DANDELION *(Taraxacum officinale)*	3	1-5	67
GUMWEED *(Grindelia squarrosa)*	1	0-1	50
PERENNIAL SOW-THISTLE *(Sonchus arvensis)*	3	1-5	50
Grass			
FOXTAIL BARLEY *(Hordeum jubatum)*	52	29-76	
NUTTALL'S SALT-MEADOW GRASS *(Puccinellia nuttalliana)*	9	2-16	100
WIRE RUSH *(Juncus balticus)*	3	0-13	30

Environmental Variables

Moisture Regime: SUBHYGRIC()

Nutrient Regime: SUBMESOTROPHIC()

Elevation (range): 726(663-748) M

Slope: 0 - 0.5(), 0.5 - 2.5()

Aspect: Level()

Soil Drainage: Imperfectly drained(), Poorly drained()

Soil Subgroup: O.HG, R.G, O.R

Soil Series: ZGW, ZUN, ZWA

Soil Correlation: SCA 4, SCA 7, SCA 10

Range Site Category: SL, LenA

Ecological Status Score:

Soil Exposure

	Mean	**Min**	**Max**
%:	7	0	35

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	2026	698	2957
Total	2025.8	698.3	2956.9

Ecologically Sustainable Stocking Rate

2.02 (4.04-1.61) HA/AUM or *0.20 (0.10-0.25) AUM/AC*

CPA42. Salt grass-Foxtail barley-Nuttall's salt- meadow grass

(Distchlis stricta-Hordeum jubatum-Puccinellia nuttalliana)

n=18 This alkali community is very common throughout the Central Parkland, some areas are Wainwright (i.e. Sunken Lake, Killarney Lake), Vermilion, Red Deer and Camrose (i.e. Birch Lake). This plant community is found in close proximity of alkali lake beds and typically adjacent to a band of foxtail barley and Nuttall's salt grass (CPA41). This community does have potential to be under water during wet years. Typically the salt grass tends to take up the drier positions whereas the foxtail and Nuttall's salt- meadow grass are more tolerant of wetter conditions. Drier areas also tend to have greater forb cover. Due to the fluctuation of water there is a high percentage of bare ground, rock and pebbles, with the litter being patchy. It is recommended that this community is grazed early in the season before the foxtail barley heads out and becomes unpalatable.

Natural Subregion: CENTRAL PARKLAND

Ecosite: I Saline Lowlands (hygric/poor)

Ecosite Phase: I1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Forb			
CREEPING WHITE PRAIRIE ASTER *(Aster falcatus)*	1	0-9	28
Grass			
FOXTAIL BARLEY *(Hordeum jubatum)*	13	1-41	100
NUTTALL'S SALT-MEADOW GRASS *(Puccinellia nuttalliana)*	9	1-27	100
SALT GRASS *(Distichlis stricta)*	38	15-62	100
WIRE RUSH *(Juncus balticus)*	1	0-7	28

Environmental Variables

Moisture Regime: SUBHYGRIC()

Nutrient Regime: SUBMESOTROPHIC()

Elevation (range): 709(614-885) M

Slope: 0 - 0.5(), 0.5 - 2.5(), 3 - 5()

Aspect: Level(), Northerly(), Easterly(), Southerly(), Westerly()

Soil Drainage: Imperfectly drained(), Poorly drained()

Soil Subgroup: O.B, O.DB, R.DB, O.BL, O.HG, O.R, BL.SS

Soil Series: EOR, FMN, HCH, MDR, MET, PHS, WWT, ZERzdb, ZGW, ZSZzbl, ZWA, ACE

Soil Correlation: SCA 4, SCA 7, SCA 10

Range Site Category: SL, LenA

Ecological Status Score:

Soil Exposure	**Mean**	**Min**	**Max**
%:	12	1	42

Comment:

Forage Production (kg/ha) n=18

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	1415	623	2506
Total	1414.6	622.5	2506

Ecologically Sustainable Stocking Rate

2.02 (4.04-1.61) HA/AUM or *0.20 (0.10-0.25) AUM/AC*

CPA43. Salt grass-Foxtail barley

(Distichlis stricta-Hordeum jubatum)

n=5 This alkali community is commonly found in the Wainwright (i.e. Horseshoe Lake), Red Deer and Ponoka area. The site of this community may be under water for a brief period of time but tends to be a drier band located just at the far edge of the current waterbody, or the transition to the bands which are not usually flooded from year to year. There will be sub-irrigation and surface salt content distinctly present. This community tends to be not a very productive community due to the palatability of foxtail barley (unless grazed early in the season).

Natural Subregion: CENTRAL PARKLAND

Ecosite: I Saline Lowlands (hygric/poor)

Ecosite Phase: I1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Forb			
GUMWEED *(Grindelia squarrosa)*	2	0-6	40
Grass			
FOXTAIL BARLEY *(Hordeum jubatum)*	11	5-31	100
SALT GRASS *(Distichlis stricta)*	43	33-61	100
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	3	0-9	60
WIRE RUSH *(Juncus balticus)*	3	0-9	80

Environmental Variables

Moisture Regime: SUBHYGRIC()

Nutrient Regime: SUBMESOTROPHIC()

Elevation (range): 701(644-882) M

Slope: 0 - 0.5()

Aspect: Level(), Easterly(), Southerly()

Soil Drainage: Imperfectly drained()

Soil Subgroup: O.BL, O.HG, BL.SS

Soil Series: EOR, ZGW, ZSZ, ZWA

Soil Correlation: SCA 4, SCA 7, SCA 10

Range Site Category: SL, LenA, Sa

Ecological Status Score:

Soil Exposure

	Mean	**Min**	**Max**
%:	6	0	16

Comment:

Forage Production (kg/ha) n=4

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	1741	810	2857
Total	1740.8	810.1	2857.1

Ecologically Sustainable Stocking Rate

2.02 (4.04-1.61) HA/AUM or *0.20 (0.10-0.25) AUM/AC*

CPA44. Slender wheat grass-Salt grass

(Agroypron trachycaulum-Distchlis stricta)

n=7 This plant community is found in the Wainwright (i.e. Sunken Lake) and Vermilion area, typically on upper and dryer slopes adjacent to alkali water. Out of the alkali complex of communities, this community has a tendency to be drier as there is less water activity unless in a year of high moisture. The community is diverse and is more mature due to sites being infrequently flooded, however still has salt influence. Typically these areas will receive light to moderate grazing use.

Natural Subregion: CENTRAL PARKLAND

Ecosite: I Saline Lowlands (hygric/poor)

Ecosite Phase: I1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Forb			
CREEPING WHITE PRAIRIE ASTER *(Aster falcatus)*	1	0-5	100
PERENNIAL SOW-THISTLE *(Sonchus arvensis)*	2	0-4	71
SEA MILKWORT *(Glaux maritima)*	8	3-14	100
SEASIDE BUTTERCUP *(Ranunculus cymbalaria)*	1	0-5	71
SILVERWEED *(Potentilla anserina)*	10	0-24	57
SMALL-LEAVED EVERLASTING *(Antennaria parvifolia)*	4	0-17	100
Grass			
FOXTAIL BARLEY *(Hordeum jubatum)*	4	0-11	57
SALT GRASS *(Distichlis stricta)*	6	0-23	57
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	14	7-37	100
UNDIFFERENTIATED SEDGE *(Carex)*	11	0-23	86
WIRE RUSH *(Juncus balticus)*	11	4-26	100

Environmental Variables

Moisture Regime: MESIC(), SUBHYDRIC()

Nutrient Regime: SUBMESOTROPHIC()

Elevation (range): 636(607-682) M

Slope: 0 - 0.5(), 0.5 - 2.5(), 3 - 5()

Aspect: Level(), Easterly(), Southerly()

Soil Drainage: Moderate well drain(), Imperfectly drained()

Soil Subgroup: O.DB, R.DB, O.BL, O.HG, O.R

Soil Series: MET, ZERzdb, ZGW, ZUN, ZWA

Soil Correlation: SCA 4, SCA 7, SCA 10

Range Site Category: SL

Ecological Status Score:

Soil Exposure

	Mean	**Min**	**Max**
%:	5	1	11

Comment:

Forage Production (kg/ha) n=7

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	1355	678	2785
Total	1354.5	678.4	2785.3

Ecologically Sustainable Stocking Rate

1.61 (2.69-1.34) HA/AUM or *0.25 (0.15-0.30) AUM/AC*

CPA45. Alkali cordgrass-Baltic rush

(Spartina gracilis-Juncus balticus)

n=5 This plant community was found in close proximity to alkali lakes in the Wainwright area (i.e. Reflex Lake, Horseshoe Lake, Birch Lake and Killarney Lake). It distinctly represents the last band of vegetation that is affected by the subirrigation or salt of the alkali slough. It will typically have one or two bands of alkali communities in between it and the water. Generally found on upper and drier areas with minimal water influence, resulting in the community to be more developed and diverse. Salt is still present in the soil, however may not be as high as communities adjacent to the water. Any sites further away from the water, towards upland, are likely to be plant communities such as CPA8 (Upland sedge- June grass) or a bluegrass communities (i.e. CPA20). This site could receive moderate grazing pressure.

Natural Subregion: CENTRAL PARKLAND

Ecosite: I Saline Lowlands (hygric/poor)

Ecosite Phase: I1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Forb			
COMMON YARROW *(Achillea millefolium)*	1	0-2	40
CREEPING WHITE PRAIRIE ASTER *(Aster falcatus)*	1	0-2	40
LOW GOLDENROD *(Solidago missouriensis)*	1	0-4	40
PERENNIAL SOW-THISTLE *(Sonchus arvensis)*	2	0-8	40
SMALL-LEAVED EVERLASTING *(Antennaria parvifolia)*	12	0-30	80
Grass			
ALKALI CORD GRASS *(Spartina gracilis)*	13	9-19	100
KENTUCKY BLUEGRASS *(Poa pratensis)*	3	0-11	60
SALT GRASS *(Distichlis stricta)*	2	0-4	80
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	3	0-6	80
UNDIFFERENTIATED SEDGE *(Carex)*	6	0-15	80
WIRE RUSH *(Juncus balticus)*	13	5-20	100

Environmental Variables

Moisture Regime: SUBMESIC(), MESIC(), SUBHYDRIC()

Nutrient Regime: SUBMESOTROPHIC()

Elevation (range): 645(600-680) M

Slope: 0 - 0.5(), 0.5 - 2.5()

Aspect: Level(), Northerly(), Westerly()

Soil Drainage: Moderate well drain(), Imperfectly drained()

Soil Subgroup: O.DB, R.DB, O.HG

Soil Series: MET, ZERzdb, ZGW, ZWA

Soil Correlation: SCA 4

Range Site Category: SL, Sa

Ecological Status Score:

Soil Exposure

	Mean	**Min**	**Max**
%:	12	4	18

Comment:

Forage Production (kg/ha) n=5

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	1000	646	1915
Total	1000	646.4	1915.4

Ecologically Sustainable Stocking Rate

1.61 (2.69-1.34) HA/AUM or *0.25 (0.15-0.30) AUM/AC*

CPA20. Kentucky bluegrass-Salt grass

(Poa pratensis-Distichlis stricta)

n=4 The salt grass community is documented from one site in Canadian Forces Base Wainwright and has been identified as a valid community type occuring on numererous sites throughout the Central Parkland (D. Amundsen pers comm.). It occurs as a broad band of vegetation around saline sloughs, occupying areas that are less saline than areas occupied by Nuttall's salt- meadow grass (Puccinellia nuttalliana). Disturbance from livestock will often cause Kentucky bluegrass to become established to form this community type, particularly on more upland areas. This plant community occurs within the grazed portion of the Alliance Range Reference Area as well within the Sunken Lake Range Reference Area.

Natural Subregion: CENTRAL PARKLAND

Ecosite: I Saline Lowlands (hygric/poor)

Ecosite Phase: I1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
ASPEN *(Populus tremuloides)*	1	0-1	50
COMMON WILD ROSE *(Rosa woodsii)*	1	0-3	50
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	2	0-3	100
UNDIFFERENTIATED WILLOW *(Salix)*	2	0-5	50
Forb			
CANADA THISTLE *(Cirsium arvense)*	1	0-2	50
CREEPING WHITE PRAIRIE ASTER *(Aster falcatus)*	2	0-3	75
PERENNIAL SOW-THISTLE *(Sonchus arvensis)*	2	0-5	50
SILVERWEED *(Potentilla anserina)*	2	0-6	50
Grass			
FOXTAIL BARLEY *(Hordeum jubatum)*	1	0-2	50
KENTUCKY BLUEGRASS *(Poa pratensis)*	13	9-16	100
NORTHERN REED GRASS *(Calamagrostis inexpansa)*	3	0-7	100
SALT GRASS *(Distichlis stricta)*	10	6-13	100
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	8	3-12	100
UNDIFFERENTIATED SEDGE *(Carex)*	4	0-8	75
WIRE RUSH *(Juncus balticus)*	2	1-5	100

Environmental Variables

Moisture Regime: MESIC(50), SUBHYGRIC(50)

Nutrient Regime: SUBMESOTROPHIC(40), MESOTROPHIC(60)

Elevation (range): 666(660-671) M

Slope: 6 - 9(50), 10 - 15(50)

Aspect: Variable()

Soil Drainage: Well drained(70), Moderate well drain(30)

Soil Subgroup:

Soil Series:

Soil Correlation: SCA 9, SCA 10

Range Site Category: Sa

Ecological Status Score: 15

Soil Exposure

	Mean	**Min**	**Max**
%:	0		

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	1500		
Total	1500	0	0

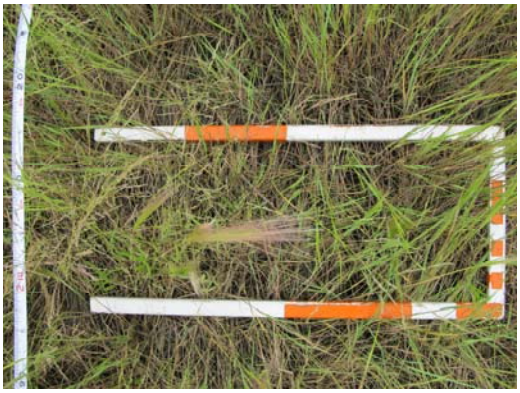
Ecologically Sustainable Stocking Rate

1.34 (2.02-1.15) HA/AUM or *0.30 (0.20-0.35) AUM/AC*

Alkali Transitions: The pictures below illustrates the vegetation band that alkali communities create due to saline influence as well as water levels. CPA40 represents the wettest complex whereas CPA20 is a transition to upland communities.

CPA40: Baltic rush- Salt grass

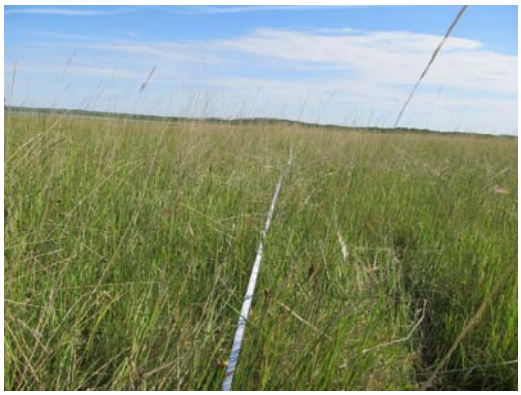
CPA41: Foxtail barley- Nuttall's salt meadow grass



CPA42: Salt grass- Foxtail barley- Nuttall's salt meadow grass

CPA43: Salt grass- Foxtail barley

CPA44: Awned wheat grass- Salt grass



CPA45: Alkali cordgrass- Baltic rush

CPA20: Kentucky bluegrass salt grass

CPA13. Three square rush

(Scirpus pungens)

n=3 This community occurs in and around emergent and saline marshes and in depressional areas (Wallis 1990). It generally occurs with varying amounts of foxtail barley and Nutall's salt meadow grass depending on moisture conditions and amount of grazing disturbance. Access may be limited due to water levels.

Natural Subregion: CENTRAL PARKLAND

Ecosite: I Saline Lowlands (hygric/poor)

Ecosite Phase: I1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Forb			
CANADA THISTLE *(Cirsium arvense)*	1	0-2	33
PERENNIAL SOW-THISTLE *(Sonchus arvensis)*	8	0-25	33
RAYLESS ASTER *(Aster brachyactis)*	3	0-10	33
SEASIDE ARROW-GRASS *(Triglochin maritima)*	20	0-60	33
Grass			
CREEPING SPIKE-RUSH *(Eleocharis palustris)*	1	0-2	33
FOXTAIL BARLEY *(Hordeum jubatum)*	10	0-30	67
NUTTALL'S SALT-MEADOW GRASS *(Puccinellia nuttalliana)*	11	0-30	67
THREE-SQUARE RUSH *(Scirpus pungens)*	60	3-90	100
WIRE RUSH *(Juncus balticus)*	10	0-30	33

Environmental Variables

Moisture Regime: HYDRIC()

Nutrient Regime: MESOTROPHIC()

Elevation (range): (-) M

Slope: 0 - 0.5()

Aspect: Level()

Soil Drainage: Imperfectly drained()

Soil Subgroup: O.DB, O.BL, O.DG, O.R, B.SO

Soil Series: ZGW, ZNA, ZWA

Soil Correlation: SCA 7, SCA 9, SCA 10

Range Site Category: SL

Ecological Status Score: 40

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

2.02 (4.04-1.01) HA/AUM or *0.20 (0.10-0.40) AUM/AC*

COND14. Samphire salt flats

(Salicornia europaea)

n=1 This type is characteristic of saline Gleyed Regosolic soils at the edge of the non-vegetated protion of hypersaline emergent marshes (Wheatley and Bentz 2002). Samphire may make up 100% of the vegetation of this area or it may represent 25% of the area and include species such as Hordeum jubatum, Triglochin maritima, Chenopodium rubrum and Suaeda calceoliformis.

Natural Subregion: CENTRAL PARKLAND

Ecosite: I Saline Lowlands (hygric/poor)

Ecosite Phase: I1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Forb			
RED GOOSEFOOT *(Chenopodium rubrum)*	5	1-10	
SAMPHIRE *(Salicornia europaea)*	50	25-100	
SEASIDE ARROW-GRASS *(Triglochin maritima)*	5	1-10	
WESTERN SEA-BLITE *(Suaeda calceoliformis)*	3	1-5	
Grass			
FOXTAIL BARLEY *(Hordeum jubatum)*	10	0-25	

Environmental Variables

Moisture Regime: HYGRIC()

Nutrient Regime: HYPEREUTROPHIC()

Elevation (range): (-) M

Slope: 0 - 0.5()

Aspect: Level()

Soil Drainage: Imperfectly drained()

Soil Subgroup:

Soil Series:

Soil Correlation: SCA 7, SCA 9, SCA 10

Range Site Category: SL, LenA

Ecological Status Score: 40

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

0.00 (0.00-0.00) HA/AUM or *(-) AUM/AC*

Non- use community.

9.13 Fen (subhydric/ rich- m)

General Description: The rich fen ecological site is characterized by flowing water and alkaline nutrient-rich conditions. The soil is composed of organic matter derived from decomposing sedges, as well as golden, tufted, and brown mosses. This ecological site occupies level and depressional areas where the water table is at or near the surface for a portion of the growing season. Basket willow dominates the canopy on the shrub phase while sedges and marsh reed grass dominate the graminoid phase of the rich fen ecological site. In the Boreal forest there is often a treed phase of this ecological site that is dominated by Larch.

Successional Relationships: The rich fen is an early stage in hydrarch succession. Species composition, and direction and rate of succession changes with the changing hydrologic regime. As with other wetlands, rich fens have slow successional rates, so recovery from disturbance may also be slow.

Indicator Species: Willows, Sedges, Bluejoint, Wire rush, Brook ragwort

Site Characteristics:

Moisture Regime: Subhydric, Hydric, Mesic, Hygric, Subhygric
Nutrient Regime: Eutrophic, Mesotrophic, Permesotrophic
Topographic Position: Level
Slope: 0- 5
Aspect: Variable

Soil Characteristics:

Organic Thickness: >80 cm
Surface Texture: C
Soil Drainage: Poorly drained, Imperfectly drained, Well drained, Moderately well drained
Soil Subgroup: R.HG, R.G, TY.F, TY.M, T.M

9.13.1 Fen (subhydric/ rich): Graminoid Fen

Characteristic Species:

Shrub: Willow
Grass: Awned sedge, Bluejoint, Small bottle sedge, Wire rush
Forb: Brook Ragwort

Community Types:

CPA10: Reed grass- Sedge (11)
CPA12: Baltic rush (5)
CPA14: Awned sedge (6)
CPA15: Beaked sedge- Awned sedge (5)
CPA21: Reed canary grass (1)
CPA22: Tall manna grass (1)
CPA23: Fowl bluegrass- Tufted hair grass (1)
COND10: Reed canary grass- Awned sedge- Narrow reed grass (1)

CPA10. Reed grass-Sedge

(Calamagrostis canadensis (C.inexpansa, C.stricta)-Carex)

n=11 This plant community or close variations of it are typically found in the Boreal. However, it can be found in wetland meadows in the Central Parkland. Marsh reed grass in particular can be aggressive at colonizing moist sites even to the point of limiting the invasion of woody vegetation. Under disturbance conditions forbs and other grasses will increase on the site.

Natural Subregion: CENTRAL PARKLAND

Ecosite: m Fen (subhydric/rich)

Ecosite Phase: m1 graminoid fen

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
UNDIFFERENTIATED WILLOW *(Salix)*	3	0-7	73
Forb			
CANADA GOLDENROD *(Solidago canadensis)*	3	0-11	82
CANADA THISTLE *(Cirsium arvense)*	2	0-7	91
PERENNIAL SOW-THISTLE *(Sonchus arvensis)*	8	0-11	82
SILVERWEED *(Potentilla anserina)*	2	0-7	55
Grass			
BLUEJOINT *(Calamagrostis canadensis)*	1	0-6	9
FOXTAIL BARLEY *(Hordeum jubatum)*	6	0-19	64
KENTUCKY BLUEGRASS *(Poa pratensis)*	3	0-17	55
NORTHERN REED GRASS *(Calamagrostis inexpansa)*	11	3-26	100
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	2	0-8	73
UNDIFFERENTIATED SEDGE *(Carex)*	12	2-39	100
WIRE RUSH *(Juncus balticus)*	2	0-6	64

Environmental Variables

Moisture Regime: SUBHYDRIC(100)

Nutrient Regime: MESOTROPHIC(50), PERMESOTROPHIC(50)

Elevation (range): 667(659-673) M

Slope: 0 - 0.5(), 0.5 - 2.5()

Aspect: Level()

Soil Drainage: Imperfectly drained()

Soil Subgroup:

Soil Series: ZUN, ZWA

Soil Correlation: SCA 4, SCA 7, SCA 9

Range Site Category: Sb

Ecological Status Score: 40

Soil Exposure

	Mean	**Min**	**Max**
%:	0		

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	2751	1681	3363
Total	2751.3	1681.35	3362.7

Ecologically Sustainable Stocking Rate

1.34 (2.69-1.01) HA/AUM or *0.30 (0.15-0.40) AUM/AC*

CPA12. Baltic rush

(Juncus balticus)

n=5 Depending on seasonal moisture regime varying amounts of sedge or conversely grass species such as northern reed grass will be assoicated with this community. Generally, sites which have been more heavily grazed will also include Kentucky bluegrass and foxtail barley.

Natural Subregion: CENTRAL PARKLAND

Ecosite: m Fen (subhydric/rich)

Ecosite Phase: m1 graminoid fen

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Forb			
CANADA THISTLE *(Cirsium arvense)*	1	0-5	40
COMMON YARROW *(Achillea millefolium)*	1	0-2	40
PERENNIAL SOW-THISTLE *(Sonchus arvensis)*	7	0-30	80
SEA MILKWORT *(Glaux maritima)*	2	0-10	40
SILVERWEED *(Potentilla anserina)*	21	2-50	100
WESTERN WILLOW ASTER *(Aster hesperius)*	16	0-30	80
Grass			
ALPINE BLUEGRASS *(Poa alpina)*	5	0-2	60
FOXTAIL BARLEY *(Hordeum jubatum)*	1	0-2	40
KENTUCKY BLUEGRASS *(Poa pratensis)*	15	0-70	60
NARROW REED GRASS *(Calamagrostis stricta)*	20	0-50	80
UNDIFFERENTIATED SEDGE *(Carex)*	2	0-3	80
WIRE RUSH *(Juncus balticus)*	63	30-80	100
Moss			
BROWN MOSS *(Drepanocladus aduncus)*	16	0-50	40

Environmental Variables

Moisture Regime: HYDRIC()

Nutrient Regime: MESOTROPHIC()

Elevation (range): (-) M

Slope: 0 - 0.5()

Aspect: Level()

Soil Drainage: Imperfectly drained()

Soil Subgroup:

Soil Series:

Soil Correlation: SCA 7, SCA 9, SCA 10

Range Site Category: LenT

Ecological Status Score: 40

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

2.02 (4.04-1.34) HA/AUM or *0.20 (0.10-0.30) AUM/AC*

CPA14. Awned sedge

(Carex atherodes)

n=6 It is found through out the Central Parkland Natural Subregion in depressions that hold water during part of the growing season. This community is differentiated from other graminoid fen communities by hydrological regime, it is not permanently flooded (Wheatley and Bentz, 2002). Grazing practices may need to be managed in a way that grazing does not occur when wet.

Natural Subregion: CENTRAL PARKLAND

Ecosite: m Fen (subhydric/rich)

Ecosite Phase: m1 graminoid fen

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Forb			
MARSH WILLOWHERB *(Epilobium palustre)*	1	0-3	67
SMALL BEDSTRAW *(Galium trifidum)*	2	0-10	33
WATER PARSNIP *(Sium suave)*	2	0-5	50
WATER SMARTWEED *(Polygonum amphibium)*	4	0-20	33
Grass			
AWNED SEDGE *(Carex atherodes)*	78	70-90	100
NARROW REED GRASS *(Calamagrostis stricta)*	9	0-10	67
SMALL BOTTLE SEDGE *(Carex utriculata)*	11	0-25	67
WATER SEDGE *(Carex aquatilis)*	2	0-13	33
WIRE RUSH *(Juncus balticus)*	4	0-20	33
Moss			
BROWN MOSS *(Drepanocladus aduncus)*	27	0-99	50

Environmental Variables

Moisture Regime: MESIC()

Nutrient Regime: MESOTROPHIC()

Elevation (range): (-) M

Slope: 3 - 5()

Aspect: Level()

Soil Drainage: Well drained()

Soil Subgroup:

Soil Series:

Soil Correlation: SCA 4, SCA 7

Range Site Category: Sb, LenS, LenSP

Ecological Status Score: 40

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

1.15 (2.02-0.80) HA/AUM or *0.35 (0.20-0.51) AUM/AC*

CPA15. Beaked sedge-Awned sedge

(Carex utriculata)

n=5 This riparian plant community is found around lentic systems in the Central Parkland Natural Subregion. The beaked sedge community is a narrow band around lentic systems and is generally to moist and unsuitable for livestock grazing therefore it should be encouraged for grazing.

Natural Subregion: CENTRAL PARKLAND

Ecosite: m Fen (subhydric/rich)

Ecosite Phase: m1 graminoid fen

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Forb			
(Ricciocarpos natans)	3	0-13	60
IVY-LEAVED DUCKWEED *(Lemna trisulca)*	15	0-50	80
MARSH WILLOWHERB *(Epilobium palustre)*	1	0-2	40
SMALL BEDSTRAW *(Galium trifidum)*	1	0-3	60
WATER PARSNIP *(Sium suave)*	1	0-5	40
Grass			
AWNED SEDGE *(Carex atherodes)*	14	0-30	80
GREAT BULRUSH *(Scirpus acutus)*	14	0-40	40
SMALL BOTTLE SEDGE *(Carex utriculata)*	63	0-90	80

Environmental Variables

Moisture Regime: HYGRIC()

Nutrient Regime: MESOTROPHIC()

Elevation (range): (-) M

Slope: 0 - 0.5()

Aspect: Level()

Soil Drainage: Poorly drained()

Soil Subgroup:

Soil Series:

Soil Correlation: SCA 7, SCA 9, SCA 10

Range Site Category: SL, LenSP

Ecological Status Score: 40

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

4.04 (40.46-2.02) HA/AUM or *0.10 (0.01-0.20) AUM/AC*

CPA21. Reed canary grass

(Phalaris arundinacea)

n=1 This community forms stands of nearly 100% vegetative cover of reed canary grass and can occur along shorelines and sub-irrigated site. Stands of reed canary grass are often quite resistant to grazing, but when impacted they are often dominated by fowl bluegrass and water smartweed (Thompson and Hansen 2002). It is recommended that livestock grazing is not to be enouraged when wet.

Natural Subregion: CENTRAL PARKLAND

Ecosite: m Fen (subhydric/rich)

Ecosite Phase: m1 graminoid fen

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
SANDBAR WILLOW *(Salix exigua)*	1	0-0	100
Forb			
COMMON HORSETAIL *(Equisetum arvense)*	1	0-0	100
Grass			
BEAKED SEDGE *(Carex rostrata)*	1	0-0	100
REED CANARY GRASS *(Phalaris arundinacea)*	98	0-0	100
SMALL-FRUITED BULRUSH *(Scirpus microcarpus)*	3	0-0	100

Environmental Variables

Moisture Regime: SUBHYDRIC()

Nutrient Regime: PERMESOTROPHIC()

Elevation (range): 650(-) M

Slope: 0 - 0.5()

Aspect: Variable()

Soil Drainage: Imperfectly drained()

Soil Subgroup:

Soil Series:

Soil Correlation: SCA 7, SCA 9, SCA 10

Range Site Category: Sb, Lent, LtcH

Ecological Status Score: 15

Soil Exposure

	Mean	**Min**	**Max**
%:	0		

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	2000		
Total	2000	0	0

Ecologically Sustainable Stocking Rate

4.04 (40.00-2.02) HA/AUM or *0.10 (0.01-0.20) AUM/AC*

CPA22. Tall manna grass

(Glyceria grandis)

n=1 This community type is usually found in wetland meadows that are seasonally flooded through out the Central Parkland and along the edges of small slow moving streams where organic matter and soil can accumulate. Suitable for hay production when water level recedes.

Natural Subregion: CENTRAL PARKLAND

Ecosite: m Fen (subhydric/rich)

Ecosite Phase: m1 graminoid fen

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Forb			
WATER SMARTWEED *(Polygonum amphibium)*	3		100
Grass			
COMMON TALL MANNA GRASS *(Glyceria grandis)*	80		100
CREEPING SPIKE-RUSH *(Eleocharis palustris)*	20		100
FOWL BLUEGRASS *(Poa palustris)*	3		100
FOXTAIL BARLEY *(Hordeum jubatum)*	1		100
SLOUGH GRASS *(Beckmannia syzigachne)*	1		100

Environmental Variables

Moisture Regime: HYGRIC(50), SUBHYDRIC(50)

Nutrient Regime: PERMESOTROPHIC(100)

Elevation (range): 650(-) M

Slope: 0 - 0.5()

Aspect: Level()

Soil Drainage: Poorly drained()

Soil Subgroup:

Soil Series:

Soil Correlation: SCA 7, SCA 9, SCA 10

Range Site Category: Sb, LenS, LenSP, LtcH

Ecological Status Score: 40

Soil Exposure

	Mean	**Min**	**Max**
%:	0		

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	2000		
Total	2000	0	0

Ecologically Sustainable Stocking Rate

2.00 (4.04-0.80) HA/AUM or *0.20 (0.10-0.51) AUM/AC*

CPA23. Fowl bluegrass-Tufted hair grass

(Poa palustris-Dechampsia cespitosa)

n=1 This community type occurs on a number of landforms including basins, edges of wet meadows, stream terraces and seepage areas. This community type occupies slightly drier sites than the awned and beaked sedge dominated community types. Heavy grazing pressure will cause tufted hairgrass to decline and these sites often become dominated by Kentucky bluegrass and fowl bluegrass. On more saline sites foxtail barley and salt grass will often become dominant with increased grazing pressure. This community usually only occupies small areas on a grazing disposition and these sites are often over stocked. Thompson and Hansen (2002) felt that this community type has been eliminated from much of its former area because of heavier grazing pressure.

Natural Subregion: CENTRAL PARKLAND

Ecosite: m Fen (subhydric/rich)

Ecosite Phase: m1 graminoid fen

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Forb			
WESTERN DOCK *(Rumex occidentalis)*	1		100
Grass			
FOWL BLUEGRASS *(Poa palustris)*	50		100
FOXTAIL BARLEY *(Hordeum jubatum)*	10		100
TUFTED HAIR GRASS *(Deschampsia cespitosa)*	40		100

Environmental Variables

Moisture Regime: SUBHYGRIC()

Nutrient Regime: PERMESOTROPHIC()

Elevation (range): 625(-) M

Slope: 3 - 5()

Aspect: Level()

Soil Drainage: Well drained()

Soil Subgroup:

Soil Series:

Soil Correlation: SCA 7, SCA 9, SCA 10

Range Site Category: Sb, Len

Ecological Status Score: 27

Soil Exposure

	Mean	**Min**	**Max**
%:	0		

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb	300		
Grass	900		
Shrub			
Tree			
Total	1200	0	0

Ecologically Sustainable Stocking Rate

2.00 (2.70-1.60) HA/AUM or *0.20 (0.15-0.25) AUM/AC*

COND10. Reed canary grass-Awned sedge-Narrow reed grass

(Phalaris arundinacea-Carex atherodes-Calmagrostis stricta)

n=1 This community is occurs near Sylvan Lake and along shorelines beyond the limits of willow growth where water depth does not exceed 20 cm (Griffiths and Griffths 1987a). The soils are hydric humisols (Wheatley and Bentz 2002). Communities further from the water include a willow shrubland, cattails followed by a broad, monoculture zone of Scirpus validus (Wheatley and Bentz 2002).

Natural Subregion: CENTRAL PARKLAND

Ecosite: m Fen (subhydric/rich)

Ecosite Phase: m1 graminoid fen

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Grass			
ARUM-LEAVED ARROWHEAD *(Sagittaria cuneata)*	3	1-5	
AWNED SEDGE *(Carex atherodes)*	35	25-50	
CREEPING SPIKE-RUSH *(Eleocharis palustris)*	3	1-5	
NARROW REED GRASS *(Calamagrostis stricta)*	10	6-15	
REED CANARY GRASS *(Phalaris arundinacea)*	35	25-50	
WATER SEDGE *(Carex aquatilis)*	3	1-5	

Environmental Variables

Moisture Regime: HYDRIC(100)

Nutrient Regime: EUTROPHIC(100)

Elevation (range): (-) M

Slope: 0 - 0.5(100)

Aspect: Level()

Soil Drainage: Poorly drained()

Soil Subgroup:

Soil Series:

Soil Correlation: SCA 9

Range Site Category: Len

Ecological Status Score: 40

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

1.61 (2.02-1.01) HA/AUM or *0.25 (0.20-0.40) AUM/AC*

9.13.2 Fen (subhydric/ rich): Shrubby Fen

Characteristic Species:

Shrub: Basket willow, Prickly rose, Snowberry, Beaked willow, Flat- leaved willow

Grass: Sedge species, Bluejoint

Community Types:

CPC13: Basket willow/ Reed grass
CPC14: Basket willow/ Kentucky bluegrass
CPC15: Basket willow- Rose- Snowberry/ Sedge
CPC20: Willow- Bog birch/ Sedge

CPC13. Basket willow/Reed grass

(Salix petiolaris/Calamagrostis spp.)

n=23 Basket willow occurs around sloughs, depressional wetlands and wet meadows, particularly in a narrow band (Thompson and Hansen 2002). In the absence of disturbance these stands become very dense and are almost completely dominated by basket willow. This dense cover tends to restrict livestock movement. Consequently this community type should be rated as non-use.

Natural Subregion: CENTRAL PARKLAND

Ecosite: m Fen (subhydric/rich)

Ecosite Phase: m2 shrubby fen

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Tree			
ASPEN *(Populus tremuloides)*	1	0-6	48
BALSAM POPLAR *(Populus balsamifera)*	1	0-5	43
Shrub			
UNDIFFERENTIATED BIRCH (SHRUBS) *(Betula)*	1	0-13	35
UNDIFFERENTIATED CURRANT *(Ribes)*	1	0-8	43
UNDIFFERENTIATED ROSE *(Rosa)*	1	0-10	39
UNDIFFERENTIATED WILLOW *(Salix)*	45	20-92	100
WILD RED RASPBERRY *(Rubus idaeus)*	2	0-15	52
Forb			
CANADA GOLDENROD *(Solidago canadensis)*	4	0-19	52
CANADA THISTLE *(Cirsium arvense)*	1	0-9	57
PERENNIAL SOW-THISTLE *(Sonchus arvensis)*	3	0-20	65
SILVERWEED *(Potentilla anserina)*	1	0-5	53
WESTERN WILLOW ASTER *(Aster hesperius)*	1	0-5	43
WILD MINT *(Mentha arvensis)*	1	0-6	48
Grass			
BLUEJOINT *(Calamagrostis canadensis)*	9	0-60	35
FOWL BLUEGRASS *(Poa palustris)*	2	0-13	43
NARROW REED GRASS *(Calamagrostis stricta)*	7	0-70	26
NORTHERN REED GRASS *(Calamagrostis inexpansa)*	4	0-21	43
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	1	0-7	43
UNDIFFERENTIATED SEDGE *(Carex)*	8	0-65	100
WIRE RUSH *(Juncus balticus)*	9	0-70	69

Environmental Variables

Moisture Regime: SUBHYDRIC()

Nutrient Regime: PERMESOTROPHIC()

Elevation (range): 673(659-695) M

Slope: 0 - 0.5(), 0.5 - 2.5()

Aspect: Variable()

Soil Drainage: Moderate well drain(), Poorly drained()

Soil Subgroup:

Soil Series: ZGW, ZNA, ZWA

Soil Correlation: SCA 7, SCA 9, SCA 10

Range Site Category: LenSP, LtcS

Ecological Status Score: 40

LFH Statistics (cm)

	Mean	**Min**	**Max**
Thickness (cm):	3.00	1.00	4.00
Litter:			

Soil Exposure

	Mean	**Min**	**Max**
%:	0		
Comment:			

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	1731	560	2578
Total	1731.17	560.45	2578.07

Ecologically Sustainable Stocking Rate

8.09 (40.00-2.69) HA/AUM or *0.05 (0.01-0.15) AUM/AC*

CPC14. Basket willow/Kentucky bluegrass

(Salix petiolaris/Poa pratensis)

n=5 This community type represents a grazing disclimax of previously described basket willow dominate community (CPC13). Heavy grazing pressure causes the native forbs and grasses to disappear in the understory of these community types and they are replaced by Kentucky bluegrass and dandelion. If grazing pressure becomes too high Canada thistle often starts to invade onto these sites.

Natural Subregion: CENTRAL PARKLAND

Ecosite: m Fen (subhydric/rich)

Ecosite Phase: m2 shrubby fen

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
ASPEN *(Populus tremuloides)*	5	0-23	40
BASKET WILLOW *(Salix petiolaris)*	26	8-41	100
SILVERBERRY *(Elaeagnus commutata)*	1	0-2	40
SNOWBERRY *(Symphoricarpos albus)*	5	0-10	60
UNDIFFERENTIATED ROSE *(Rosa)*	1	0-3	60
Forb			
CANADA ANEMONE *(Anemone canadensis)*	2	0-4	80
CANADA GOLDENROD *(Solidago canadensis)*	3	0-6	60
CANADA THISTLE *(Cirsium arvense)*	3	0-8	80
COMMON BLUE LETTUCE *(Lactuca pulchella)*	1	0-4	40
COMMON DANDELION *(Taraxacum officinale)*	2	1-5	100
PERENNIAL SOW-THISTLE *(Sonchus arvensis)*	4	0-12	60
SILVERWEED *(Potentilla anserina)*	1	0-4	40
WILD STRAWBERRY *(Fragaria virginiana)*	1	0-1	40
WILD VETCH *(Vicia americana)*	1	0-3	80
Grass			
AWNLESS BROME *(Bromus inermis)*	2	0-7	60
KENTUCKY BLUEGRASS *(Poa pratensis)*	16	6-34	100
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	2	0-5	80
UNDIFFERENTIATED SEDGE *(Carex)*	5	0-8	100

Environmental Variables

Moisture Regime: SUBHYDRIC()

Nutrient Regime: PERMESOTROPHIC()

Elevation (range): 710(662-800) M

Slope: 0 - 0.5(), 0.5 - 2.5()

Aspect: Variable()

Soil Drainage: Moderate well drain(), Poorly drained()

Soil Subgroup:

Soil Series: ZGW, ZNA, ZWA

Soil Correlation: SCA 7, SCA 9, SCA 10

Range Site Category: LenSP, LtcS

Ecological Status Score: 15

LFH Statistics (cm)

	Mean	**Min**	**Max**
Thickness (cm):	10.00		
Litter:			

Soil Exposure

	Mean	**Min**	**Max**
%:	0		
Comment:			

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	1569	673	2802
Total	1569.26	672.54	2802.25

Ecologically Sustainable Stocking Rate

2.69 (4.04-1.61) HA/AUM or *0.15 (0.10-0.25) AUM/AC*

CPC15. Basket willow/Rose-Snowberry/Sedge

(Salix petiolaris/Rosa acicularis-Symphoricarpos occidentalis/Sedge)

n=2 This community type is slightly drier and better drained than the other basket willow dominated community types. This community type represents the transition between Bebb willow and basket willow dominated sites. The drier conditions favour the growth of more mesic species which include Bebbs willow, rose and snowberry.

Natural Subregion: CENTRAL PARKLAND

Ecosite: m Fen (subhydric/rich)

Ecosite Phase: m2 shrubby fen

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
BASKET WILLOW *(Salix petiolaris)*	40	25-55	100
BEAKED WILLOW *(Salix bebbiana)*	3	0-5	50
PRICKLY ROSE *(Rosa acicularis)*	32	3-60	100
RED-OSIER DOGWOOD *(Cornus stolonifera)*	4	0-7	50
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	20	10-30	100
UNDIFFERENTIATED CURRANT *(Ribes)*	3	0-5	50
WILD RED RASPBERRY *(Rubus idaeus)*	2	0-3	50
Forb			
CANADA GOLDENROD *(Solidago canadensis)*	1	0-2	50
COMMON DANDELION *(Taraxacum officinale)*	2	1-2	100
COMMON FIREWEED *(Epilobium angustifolium)*	2	0-3	50
COMMON PINK WINTERGREEN *(Pyrola asarifolia)*	1	0-2	50
NORTHERN BEDSTRAW *(Galium boreale)*	1	0-2	50
STAR-FLOWERED SOLOMON'S-SEAL *(Smilacina stellata)*	1	1-2	100
Grass			
FOWL BLUEGRASS *(Poa palustris)*	4	0-7	50
FOWL MANNA GRASS *(Glyceria striata)*	1	0-1	50
FRINGED BROME *(Bromus ciliatus)*	4	1-6	100
KENTUCKY BLUEGRASS *(Poa pratensis)*	1	0-2	50
SEDGE SPECIES *(Carex spp.)*	9	0-18	50
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	6	0-12	50

Environmental Variables

Moisture Regime: SUBHYGRIC(), SUBHYDRIC()

Nutrient Regime: PERMESOTROPHIC()

Elevation (range): 730(660-800) M

Slope: 0 - 0.5()

Aspect: Variable()

Soil Drainage: Moderate well drain()

Soil Subgroup:

Soil Series:

Soil Correlation: SCA 7, SCA 9, SCA 10

Range Site Category: LenS, LenT

Ecological Status Score: 40

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	785		
Total	784.63	0	0

Ecologically Sustainable Stocking Rate

1.70 (2.00-1.50) HA/AUM or *0.24 (0.20-0.27) AUM/AC*

CPC20. Willow-Bog birch/Sedge

(Salix spp-Betula glandulosa/Carex spp.)

n=12 Willow communities occurs around sloughs, depressional wetlands and wet meadows, particularly in a narrow band (Thompson and Hansen 2002). This particular community occupies slightly wetter sites than the basket willow reed grass dominated community type (CPC13). In the absence of disturbance these stands become very dense and are almost completely dominated by willow and bog birch. This dense cover tends to restrict livestock movement. Consequently this community type should be rated as non-use.

Natural Subregion: CENTRAL PARKLAND

Ecosite: m Fen (subhydric/rich)

Ecosite Phase: m2 shrubby fen

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
BALSAM POPLAR *(Populus balsamifera)*	1	0-4	33
UNDIFFERENTIATED BIRCH (SHRUBS) *(Betula)*	28	5-47	100
UNDIFFERENTIATED RASPBERRY *(Rubus)*	2	1-4	58
UNDIFFERENTIATED WILLOW *(Salix)*	20	11-37	100
Forb			
BOG VIOLET *(Viola nephrophylla)*	3	0-9	75
CANADA GOLDENROD *(Solidago canadensis)*	1	0-5	50
COMMON PINK WINTERGREEN *(Pyrola asarifolia)*	1	0-2	50
PERENNIAL SOW-THISTLE *(Sonchus arvensis)*	1	0-3	33
SEASIDE ARROW-GRASS *(Triglochin maritima)*	1	0-4	33
Grass			
BOG MUHLY *(Muhlenbergia glomerata)*	1	0-2	42
NORTHERN REED GRASS *(Calamagrostis inexpansa)*	4	0-24	58
UNDIFFERENTIATED SEDGE *(Carex)*	19	6-26	100

Environmental Variables

Moisture Regime: SUBHYDRIC()

Nutrient Regime: PERMESOTROPHIC()

Elevation (range): 667(663-670) M

Slope: 0 - 0.5()

Aspect: Variable()

Soil Drainage: Moderate well drain(), Poorly drained()

Soil Subgroup:

Soil Series:

Soil Correlation: SCA 7, SCA 9, SCA 10

Range Site Category: Sb, LenSP

Ecological Status Score: 40

LFH Statistics (cm)	Mean	Min	Max
Thickness (cm):	7.00	3.00	10.00
Litter:			

Soil Exposure	Mean	Min	Max
%:	0		
Comment:			

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	1585	560	2802
Total	1585.27	560.45	2802.25

Ecologically Sustainable Stocking Rate

40.00 (40.00-4.04) HA/AUM or *0.01 (0.01-0.10) AUM/AC*

9.14 Marsh (hydric/ rich- n)

General Description: The marsh ecosite is found in level and depressional areas along shorelines of water bodies and the riparian zones. The water is above the rooting zone for at least part of the growing season. This ecological site is dominated by a wide variety of emergent sedges and rushes.

Successional Relationships: The marsh ecological site characterizes the beginning stages of hydrarch succession. It can be thought of as successionally stable with changes in plant community composition being determined largely by disturbance regime.

Indicator/ Characteristic species: Sedge, Creeping spike rush, Common cattail

Site Characteristics:

Moisture Regime: Subhydric, Hydic
Nutrient Regime: Eutrophic, Hypereutrophic
Topographic Position: Level, Depression
Slope: 0- 0.5%
Aspect: Level

Soil Characteristics:

Organic Thickness: 0- 39 cm
Surface Texture: C, SiC
Soil Drainage: Poorly drained, Very poorly drained
Soil Subgroup: R.HG, R.G

9.14 Marsh (hydric/ rich): Grassland

Community Types:
CPA16: Great bulrush (2)
CPA17: Cattails (4)

CPA16. Great bulrush

(Scirpus acutus)

n=2 This community type is found throughout the Central Parkland in emergent and saline marshes (Wallis 1990). It occurs along lakeshores in poorly drained areas of Typic and Terric Humisolic soils (Wheatley and Bentz 2002).

Natural Subregion: CENTRAL PARKLAND

Ecosite: n Marsh (hydric/rich)

Ecosite Phase: n1 marsh

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Forb			
PURPLE FRINGED RICCIA *(Ricciocarpos natans)*	1	0-1	50
CELERY-LEAVED BUTTERCUP *(Ranunculus sceleratus)*	1	0-1	50
COMMON CATTAIL *(Typha latifolia)*	3	0-5	50
COMMON MARE'S-TAIL *(Hippuris vulgaris)*	1	0-1	50
IVY-LEAVED DUCKWEED *(Lemna trisulca)*	1	0-1	50
MARSH WILLOWHERB *(Epilobium palustre)*	2	0-3	50
NORTHERN STITCHWORT *(Stellaria calycantha)*	1	0-1	50
SMALL BEDSTRAW *(Galium trifidum)*	1	0-1	50
WATER PARSNIP *(Sium suave)*	6	2-10	100
Grass			
ALPINE BLUEGRASS *(Poa alpina)*	1	0-1	50
AWNED SEDGE *(Carex atherodes)*	4	2-5	100
GREAT BULRUSH *(Scirpus acutus)*	99	99-99	100
SMALL BOTTLE SEDGE *(Carex utriculata)*	8	5-10	100
Moss			
BROWN MOSS *(Drepanocladus aduncus)*	70	50-90	100

Environmental Variables

Moisture Regime: SUBHYDRIC()

Nutrient Regime: HYPEREUTROPHIC()

Elevation (range): (-) M

Slope: 0 - 0.5()

Aspect: Level()

Soil Drainage: Poorly drained()

Soil Subgroup:

Soil Series:

Soil Correlation: SCA 7, SCA 9, SCA 10

Range Site Category: SL, LenSP, LtcH

Ecological Status Score: 40

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

0.00 (0.00-0.00) HA/AUM or *(-) AUM/AC*

CPA17. Cattails

(Typha latifolia)

n=4 This community type is found throughout the Central Parkland in areas where the water level is above the rooting zone for at least part of the growing season, slope and aspect are level and nutrient levels are high (Wheatley and Bentz 2002). This type is dominated by cattails and can have a significant cover of floating duckweed (Griffiths et al. 1995) on very poorly drained areas of Rego Gleysols or Rego Humic Gleysolic soils (Wheatley and Bentz 2002).

Natural Subregion: CENTRAL PARKLAND

Ecosite: n Marsh (hydric/rich)

Ecosite Phase: n1 marsh

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Forb			
(Ricciocarpos natans)	3	0-10	50
COMMON CATTAIL *(Typha latifolia)*	92	70-99	100
IVY-LEAVED DUCKWEED *(Lemna trisulca)*	35	0-70	75
MARSH WILLOWHERB *(Epilobium palustre)*	1	0-1	75
SMALL BEDSTRAW *(Galium trifidum)*	1	0-1	50
WATER PARSNIP *(Sium suave)*	2	0-5	50
Grass			
AWNED SEDGE *(Carex atherodes)*	2	0-5	50
GREAT BULRUSH *(Scirpus acutus)*	5	1-10	100
SLOUGH GRASS *(Beckmannia syzigachne)*	2	0-5	50
SMALL BOTTLE SEDGE *(Carex utriculata)*	3	0-5	75
Moss			
BROWN MOSS *(Drepanocladus aduncus)*	44	0-80	75

Environmental Variables

Moisture Regime: HYDRIC()

Nutrient Regime: EUTROPHIC()

Elevation (range): (-) M

Slope: 0 - 0.5()

Aspect: Level()

Soil Drainage: Very poorly drained()

Soil Subgroup: R.HG, R.G

Soil Series:

Soil Correlation: SCA 7, SCA 9, SCA 10

Range Site Category: WL, LenSP

Ecological Status Score: 40

Soil Exposure

	Mean	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

0.00 (0.00-0.00) HA/AUM or *(-) AUM/AC*

10.0 Literature Cited

Achuff, P.L. 1994. Natural regions, subregions and natural history themes of Alberta. A classification for protected areas management. Alberta Environmental Protection, Edmonton, Alberta. 72 pp.

Adams, B.W., G. Ehlert, C. Stone, M. Alexander, D.Lawrence, M. Willoughby, D. Moisey, C.Hincz, A. Burkinshaw, J.Carlson, and K. France. 2009. Range Health Assessment for Grassland, Forest and Tame Pasture. Alberta Sustainable Resource Development. Lands Division. Rangeland Management Branch. Pub. No. T/044. 128 pp.

Alberta Soil Information Center (ASIC). 2001. AGRASID 3.0. Agricultural Region of Alberta Soil Inventory Database Version 3.0. Edited by J.A. Brierley, T.C. Martin, and D.J. Spiess. Agriculture and Agri-Food Canada, Research Branch, and Alberta Agriculture, Food and Rural Development, Conservation and Development Branch. Edmonton, Alberta. Available: http://www.agric.gov.ab.ca/asic.

Alberta Sustainable Resource Development (ASRD). 2007. Range Survey Manual for Alberta Rangelands: Version 1. Lands Division. Rangeland Management Branch. Pub. No. I/176

Beckingham, J., I.G.W. Corns and J.H. Archibald. 1996. Field Guide to Ecosites of West-Central Alberta. Special report 9. Canadian Forest Service. Northwest Region. Northern Forestry Centre.

Brierley, J.A., A.T. Rodvang, and W.W. Pettapiece. 1991. Soil Survey of the Municipal District of Cardston (M.D. No. 6), Alberta. Land Resource Research Contribution No. 87-62. Alberta Institute of Pedology Report No. S-86-48. Edmonton, Alberta. 86 pp. + maps.

Brierley, J.A., J. Kwiatkowski, and L.C. Marciak. 1992. Land Systems within the County of Stettler, Alberta. Agriculture Canada, Centre for Land and Biological Resources Research Contribution No. 92-205; Alberta Agriculture, Edmonton, Alberta. 52 pp., 1 map.

Coenen 2003. Classification of Sand Dune and Sand Plain Plant communities in the Wainwright Dunes Ecological Reserve. Geowest Environmental Consultants, Edmonton, Alberta.

Corns, I.G.W. and R.M. Annas. 1986. Field guide to forest ecosystems of West- Central Alberta. Northern Forestry Centre, Canadian Forestry Service, Edmonton, AB. 251 pp.

Environment Canada, 2002. Canadian Climate Normals for the 1971 - 2000 period. Available at www.msc-smc.ec.gc.ca/climate/climatenormals/results

Gauch, H.G. 1982. Multivariate analysis in community ecology. Cambridge University Press. Cambridge. 298 pp.

Geowest. 2003. Environmental Consultants Ltd. Plant Community Classification of the Pakowki Sandhills and Sand Plains. Geowest Environmental Consultants Ltd, Edmonton, Alberta. Available at http://tpr.alberta.ca/parks/heritageinfocentre/docs/Pakowki_Report.pdf.

Godfrey, J. (Ed.). 1993. Edmonton beneath our feet. A guide to the geology of the Edmonton region. Edmonton Geological Society, Edmonton, Alberta. 150 pp.

Griffiths, D.E. and G.C.D. Griffiths. 1987a. Biophysical survey of Sylvan Lake Natural Area, AB. Public Lands Division. Alberta Forestry, Lands and Wildlife, Edmonton, Alberta.

Holechek, J.L., R.D. Pieper and C.H.Herbel. 1995. Range management principles and practices.2. Prentic-Hall Inc. engewood Cliff. New Jersey. Chapter 8.

Jackson, P.C. 1981. Geological highway map of Alberta. Canadian Society of Petroleum Geologists, Calgary, Alberta. Edited by R. de Wit. Map and Legend.

Kjearsgaard, A.A. 1988. Reconnaissance Soil Survey of the Oyen Map Sheet - 72M. Alberta Soil Survey Report No. S-76-36. Land Resource Research Center Contribution No. 85-56. Agriculture Canada, Edmonton, Alberta. 49 pp., 2 maps.

Kwiatkowski, J., and L.C. Marciak. 1994. Land systems within the County of Vulcan, Alberta. Alberta Agriculture, Food and Rural Development, Conservation and Development Branch. Edmonton, AB., 63 pp., 1 map.

MacMillan, R.A., W.L. Nikiforuk, and A.T. Rodvang. 1988. Soil survey of the County of Flagstaff, Alberta. Alberta Soil Survey Report No. 51. Research Branch, Agriculture Canada, and Terrain Sciences Dept., Alberta Research Council, Edmonton, Alberta. 88 pp.

McBride, R.A., J.A. Brierley, and L.C. Marciak. 1995. Municipal District of Starland (No. 47) Land Systems. Agriculture and Agri-Food Canada Centre for Land and Biological Resources Research, Prairie Farm Rehabilitation Administration, and Alberta Agriculture, Food and Rural Development. Edmonton, Alberta. Map and Legend.

McNeil, R.L. 2003. Ecological/range sites and potential plant communities of southern Alberta, derived from AGRASID 3.0. Prepared by LandWise Inc. for the Integrated Resource Management Branch, Alberta Environment.

Mugglier, W.F. 1988. Aspen community types of the Intermountain Region. USDA Intermountain Research Station. INT-250. 133pp.

Mussieux, R., and M. Nelson. 1998. A traveller's guide to geological wonders in Alberta. The Provincial Museum of Alberta, Federation of Alberta Naturalists, Canadian Society of Petroleum Geologists, and Alberta Community Development. Edmonton, AB. 254pp. pp.

Natural Regions Committee 2006. Natural Regions and Subregions of Alberta. Compiled by D.J. Downing and W.W. Petapiece. Government of Alberta. Pub. No. T/852.

Nikiforuk, L., B. Sawyer, L. Knapik, and M.R. Johnson (Eds). 1994. CAESA soil inventory project procedures manual. Version 2.1. Produced by the CAESA Soil Inventory Project Agriculture and Agri-Food Canada, Alberta Research Council, and Alberta Agriculture, Food and Rural Development.

Pettapiece, W.W. 1986. Physiographic subdivisions of Alberta, 1:1.5 million. Map and Legend. Land Resource Research Center, Research Branch, Agriculture Canada, Ottawa, Ontario.

Saskatchewan Environment and Resource Management (SERM). 1998. The Ecoregions of Saskatchewan. Published by the Canadian Plains Research Center, University of Regina. Principle Authors D.F. Acton, G.A. Padbury, and C.T. Stushnoff. 205 pp.

SCWG (Soil Classification Working Group). 1998. The Canadian System of Soil Classification, Third Edition. Research Branch, Agriculture and Agri-Food Canada, Publ. 1646. National Research Council of Canada Research Press, Ottawa, Ontario. 187 pp.

Shetsen, I., 1987. Quaternary Geology, Southern Alberta. 1:500,000. Alberta Research Council, Terrain Sciences Dept. Digital version is available for $20.00 from the Alberta Geological Survey, email EUB.AGS-Library@gov.ab.ca.

Strong, W.L., and K.R. Leggat. 1992. Ecoregions of Alberta. Technical Report T/245. Alberta Forestry, Lands and Wildlife, Edmonton, Alberta. 59 pp. + map.

Task Group on Unity in Concept and Terminology. 1995. New concepts for assessment of rangeland condition. J. Range Manage. 48: 271-282.

Thompson, W.H. and P.L. Hansen. 2002. Classification and management of riparian and wetland sites of the Alberta Grassland Natural Region and adjacent subregions. Bitterroot Restoration, Inc. Prepared for the Alberta Riparian Habitat Management Program-Cows and Fish, Lethbridge. 416 pp.

Wallace, C. 1990. Reconnaissance survey of saline wetlands and springs in the Grassland and Parkland region of Eastern Alberta. World Wildlife Fund, Prairie for Tomorrow, Edmonton, Alberta.

Walker, B.D., J.A. Brierley, and G.M. Coen. 1991. Soil Survey of the Pincher Creek - Crowsnest Pass Area, Alberta. Alberta Soil Survey Report No. 50. Agriculture Canada, Research Branch, Land Resource Research Contribution No. 88-04. Alberta Institute of Pedology Publication No. S-91-50. Edmonton, Alberta. 194 pp.

Walker, B.D., and C. Wang. 1994. Benchmark site documentation 05:AB (Provost Alberta). Center for Land and Biological Resources Research, Agriculture and Agri-Food Canada, Edmonton, Alberta. CLBRR Contribution No. 95-03. 22 pp.

Wheatley, M. and J. Bentz. 2002. A preliminary classification of plant communities in the Central Parkland Natural Subregion of Alberta. Alberta Sustainable Resource Development, Public Lands Division, Resource Data Branch, Edmonton, Alberta.

Wells, R.E., and W.L. Nikiforuk. 1988. Soil survey of the County of Paintearth, Alberta. Alberta Soil Survey Report No. 49. Terrain Sciences Dept., Alberta Research Council, Edmonton, Alberta. 54 pp. + maps.

Wyatt, F.A., J.D. Newton, W.E. Bowser, and W. Odynsky. 1938. Soil survey of the Sullivan Lake Sheet. Bulletin No. 31. Dept. of Extension, University of Alberta Edmonton, Alberta. 102 pp.

Wyatt, F.A., J.D. Newton, W.E. Bowser, and W. Odynsky. 1944. Soil survey of the Wainwright and Vermillion Sheets. Bulletin No. 42. Dept. of Extension, University of Alberta Edmonton, Alberta. 122 pp.

11.0 Appendix

11.0.1 Detailed Climatic Data

Table 7. Summary of climatic data for selected stations in SCA 7 in the southeast portion of the Central Parkland Natural Subregion.

Ecodistrict	Station	Elev. (m)	Location (degrees and minutes N; W)	Mean Daily Temp. (°C)	Total precip. (P) (mm)	Mean precip. as rain (%)	% of ppt. May to Sept.	Degree Days > 5°C
Bashaw Upland	Elnora	930	51° 57'; 113° 11'	N/A	463.1	73.8	68.2	N/A
	Stettler North	821	52° 10'; 112° 43'	3.0	481.1	77.0	71.7	1430.3
	Viking	691	53° 06'; 111° 46'	2.8	431.3	80.2	73.0	1514.4
Sedgewick Plain	Holden South	709	53° 04'; 112° 16'	N/A	422.3	78.0	72.2	N/A
	Forestburg Plant	663	52° 58'; 112° 07'	4.1	406.0	79.9	72.7	1679.9
Vermilion Upland (S)	Fabyan	698	52° 58'; 111° 00'	2.0	421.3	74.4	68.1	NA
	Paradise Valley	658	53° 07'; 110° 21'	2.1	403.2	71.4	66.7	1443.6
	Kinsella Ranch	705	53° 00'; 111° 31'	2.7	431.2	73.8	68.2	1487.6
Lloydminster Plain (S)	Lloydminster	669	53° 18'; 110° 04'	1.9	408.1	76.3	70.1	1418.7
	Lloydminster	-------	-------	2.0	421.9	68.8	62.8	1522.7
Average				**2.6**	**429.0**	**75.4**	**69.4**	**1499.6**

Table 8. Summary of climatic data for selected stations in SCA 9 in the Central Parkland Natural Subregion.

Ecodistrict	Station	Elev. (m)	Location (degrees and minutes N; W)	Mean Daily Temp. (^{o}C)	Total precip. (P) (mm)	Mean precip. as rain (%)	% of ppt. from May to Sept.	Degree Days > 5^{o}C
Olds Plain	Madden	1138	51^{o} 30'; 114 ^{o} 19'	3.9	466.5	72.6	72.8	1306.8
	Olds	1040	51^{o} 46'; 114 ^{o} 06'	3.1	494.9	75.2	71.8	1285.5
Red Deer Plain	Red Deer Airport	905	52^{o} 10'; 113 ^{o} 53'	2.4	482.7	79.0	75.0	1306.1
	Lacombe CDA	847	52^{o} 28'; 113 ^{o} 45'	2.6	446.0	80.8	76.0	1318.5
	Markerville	914	52^{o} 07'; 114 ^{o} 07'	N/A	541.4	77.0	74.0	N/A
Pine Lake Upland	Trochu Town	876	51^{o} 49'; 113 ^{o} 13'	3.7	431.7	80.3	74.9	N/A
Average				**3.1**	**477.2**	**77.5**	**74.1**	**1304.2**

Table 9. Climate Table for selected stations in the Black Soil Region of SCA 10 in the Central Parkland Natural Subregion.

Ecodistrict	Station	Elev (m)	Location (degrees and minutes N; W)	Mean Daily Temp. (^{o}C)	Total precip. (P) (mm)	Mean precip. as rain (%)	% of ppt. from May to Sept.	Degree Days > 5^{o}C
Andrew Plain	Andrew	610	54^{o}01'; 112^{o}13'	2.5	425.6	79.5	74.5	1493.2
	Lavoy	670	53^{o}31'; 111^{o}52'	N/A	460.0	73.2	65.9	N/A
	Vegreville	639	53^{o}31'; 112^{o}06'	2.3	373.6	79.6	74.1	1406.3
	Vegreville CDA	636	53^{o}28'; 112^{o}01'	1.7	411.9	79.0	73.0	1378.0
	Warwick	610	53^{o}39'; 111^{o}58'	1.7	420.2	75.2	70.8	1396.2
Leduc Plain	Calmar	720	53^{o}16'; 113^{o}51'	2.9	520.9	76.0	69.8	1433.6
	Calmar W	725	53^{o}16'; 113^{o}52'	N/A	524.9	78.1	72.1	N/A
	Edmonton City Centre A	671	53^{o}34'; 113^{o}31'	[Z]3.9	476.9	76.7	71.4	[Z] 1618.7
	Edmonton International A	723	53^{o}19'; 113^{o}34'	2.4	482.7	77.6	72.5	1360.0
	Edmonton Namao A	688	53^{o}40'; 113^{o}28'	3.1	466.3	77.7	73.6	1469.5
	Edmonton Woodbend	671	53^{o}25'; 113^{o}45'	2.8	531.4	77.9	72.2	1356.3
	Ellerslie	693	53^{o}25'; 113^{o}33'	2.2	459.6	76.9	71.7	
	Fort Sask.	620	53^{o}43'; 113^{o}10'	2.9	459.5	77.2	69.7	1480.0
	Gwynne	768	52^{o}57'; 113^{o}10'	2.6	499.0	78.7	71.9	1383.4
	Oliver Tree Nursery	648	53^{o}39'; 113^{o}22'	3.2	479.7	78.3	72.5	1486.9
Vermilion Upland (N)	Ranfurly	686	53^{o}27'; 111^{o}39'	2.2	426.6	74.2	70.7	1460.3
Daysland Plain (W)	Camrose	739	53^{o}01'; 112^{o}49'	2.7	477.7	74.2	68.4	1435.5
	Tofield North	701	53^{o}33'; 112^{o}45'	3.1	505.7	75.4	70.6	1431.1
Average				**2.6**	**466.8**	**77.0**	**71.4**	**1426.5**

[Z]The mean daily temperature and degree days data for Edmonton city-centre airport were not included in the computed averages for SCA 10, due to the thermal influence created by the city.

11.0.2 Detailed Soil Data

Table 10. Soils series of SCA7 linked to Range or GVI Types. Central Parkland Subregion; Thin Black Soil Zone of East Central Alberta.

Productivity Rating	Ecological Range Site or GVI Site Type	Soil or Landscape Description	Soil Series
More herbage due to superior soil moisture	Overflow (Ov)	Non-saline fan, apron, or concave landscapes	**BEL, BLL, ACE**
	Subirrigated (Sb)	Gleyed; imperfectly drained	GLD
	Lentic (Len)	Gleysols; poorly drained	COR, DSJaa, FLTaa, FMN, HGTaa, HYLaa
Normal Vegetation Response	Clayey (Cy)	Fine (FI) or very fine (VF) textures	**BTH, GDB**, **KTY**, **SDG**, TOA
	Loamy (Lo)	Medium (ME) or moderately fine (MF) textures	**ACE, AMT, BEL, BLL**, **DYD**, EOR, HER, **KLM**, **KPO**, **LOG**
	Sandy (Sy)	Moderately coarse (MC) textures	**AMT**, IRM, METaa, ROS
Limited by moisture (or soluble salts adversely affecting plant growth)	Badlands (BdL)	Bedrock generally <1m deep and many exposures	**SHS**
	Blowouts (BlO)	Dominant or co-dominant soils in the Solonetzic order	**BTH, DYD, GDB, KLM, KPO, LOG, SDG, SHS**
	Choppy Sandhills (CS)	Duned landscape models and very coarse (VC) textures	**RED**
	Gravel (Gr)	Gravel at or within 30 cm of soil surface	KNA
	Limy (Li)	Calcareous or Rego Subgroups	
	Saline Lowlands (SL)	Saline discharge; salt-enriched	
	Sands (Sa)	Very coarse (VC) textures and not duned	**CPL**, HCHaa, **RED**
	Shallow to Gravel (SwG)	Veneer (30 – 100 cm) over gravels	**CPL**
	Thin Breaks (TB)	Bedrock generally, 1 – 5 m with some exposures	**SHS, KVGaa, KTY**

Table 11. Soils series of SCA9 linked to Range or GVI Types. Central Parkland Subregion; Thick Black Soil Zone of Southwest- Central Alberta

Productivity Rating	Ecological Range Site or GVI Site Type	Soil or Landscape Description	Soil Series
More herbage due to superior soil moisture	Overflow (Ov)	Non-saline fan, apron, or concave landscapes	**LPN, PED**
	Subirrigated (Sb)	Gleyed; imperfectly drained	
	Lentic (Len)	Gleysols; poorly drained	COH, HAR, TUT
Normal Vegetation Response	Clayey (Cy)	Fine (FI) or very fine (VF) textures	**BPW**, EAT, LLK
	Loamy (Lo)	Medium (ME) or moderately fine (MF) textures	ATL, CYG, DDY, **LPN**, MKV, **PED**
	Sandy (Sy)	Moderately coarse (MC) textures	**SCO,** TWS
Limited by moisture (or soluble salts adversely affecting plant growth)	Badlands (BdL)	Bedrock generally <1m deep and many exposures	
	Blowouts (BlO)	Dominant or Co-dominant soils in the Solonetzic order	MYK, NIB
	Choppy Sandhills (CS)	Duned landscape models and very coarse (VC) textures	**MGS**
	Gravel (Gr)	Gravel at or within 30 cm of soil surface	**SCO**
	Limy (Li)	Calcareous or Rego Subgroups; or eroded phases	**BPW,** NSK
	Saline Lowlands (SL)	Saline discharge; salt-enriched	
	Sands (Sa)	Very coarse (VC) textures and <u>not</u> duned	**MGS**
	Shallow to Gravel (SwG)	Veneer (30 – 100 cm) over gravels	ISF**, SCO**
	Thin Breaks (TB)	Bedrock generally, 1 – 5 m with some exposures	

Table 12. Soils series of SCA10 linked to Range or GVI Types. Central Parkland and Dry Mixedwood Subregion; Black and Dark Gray to Gray Soil Zone of Alberta

Productivity Rating	Ecological Range Site or GVI Site Type	Soil or Landscape Description	Soil Series Codes
More herbage due to superior soil moisture	Overflow (Ov)	Non-saline fan, apron, or concave landscapes	**EVL, HBM, POK, RMY**
	Subirrigated (Sb)	Gleyed; imperfectly drained	ANR, **ATO**, BOB, EBG, EDG, EGO, JFF, **NMP**, **NVR**, PIB, **RFX**, RHK, **VOL, WBG, WBH**
	Lotic (Ltc)	Active floodplains	GRZ
	Lentic (Len)	Gleysols; poorly drained	BAK, BIT, **BOA**, DEV, DKN, DMY, DSJ, DVL, GSP, HGT, **HRL, HYL**, JVE, KSY, MAK, MLT, MNTaa, MPVaa, ONW, RCS, RVN, **SHD**
Normal Vegetation Response	Clayey (Cy)	Fine (FI) or very fine (VF) textures	BLB, CCB, ELL, HDR, LOM, **LWT**, MCO, MIQ, MJU, MLA, **MLS**, MMO, **MNK**, MYW, **NVR**, **RFX**, SLW, STL, **VOL**, **WAB**, **WBH**, **WKN**
	Loamy (Lo)	Medium (ME) or moderately fine (MF) textures	AGS, **ARM**, **ATO**, BEN BTN, BVH, **BWF**, **CMO**, COA, CVL, CYGaa, **EDG**, **EVL**, FLU, GOY, **HBM**, HGV, KHS, LNN, **MAA**, **MVL**, MEW, **MDE**, NKU, NRM, **POK**, RLV, **RMY**, STE, **TBY, TFD**, UCS, **WBG**, WSR, WTB
	Sandy (Sy)	Moderately coarse (MC) textures	**ATM**, **BRK**, **CVL**, ELP, **FTH**, GBL, HLB, HOD, MSW, NTV, PHF, PHS, RDW, TGL, UKT
Limited by moisture (or soluble salts adversely affecting plant growth)	Badlands (BdL)	Bedrock generally <1m deep and many exposures	**BSU, KVG, KWO**
	Blowouts (BlO)	Dominant or Co-dominant soils in the Solonetzic order	**ARM, CMO, DNT,** DUG, **KSD, KVG, KWO, LWT, MLS, MNK, NMP, TBY, TFD, WAB,** WHF, **WKN**
	Choppy Sandhills (CS)	Duned landscape models; Very coarse (VC) textures	DWGaa, **PRM**
	Gravel (Gr)	Gravel at or within 30 cm of soil surface	**FTH**, LBK, SIS, **TWH**
	Limy (Li)	Calcareous or Rego soils	**BWF**
	Saline Lowland (SL)	Saline discharge; salt-enriched	**BOA, BWF**, **HRL**, **HYL**
	Sands (Sa)	Very coarse (VC) and not duned	GUR, HLW, MDR, NTWaa, **PRM**
	Shallow to Gravel (SwG)	Veneer (30 – 100 cm) over gravels	**ATM, TWH**
	Thin Breaks (TB)	Bedrock generally, 1 – 5 m with some exposures	**BSU, DNT, KSD, KVG, KWO, MAA, MDE, MVL, NMP, PHF, SHD**

Table 13. Range or GVI Site Types linked to Plant Communities and the Ecodistricts. Dominant sites are listed behind the plant community name and significant types are in brackets.

Range or GVI Site	Range Plant Community	Ecodistrict
Choppy Sandhills (CS)	CPA9 Sand Dropseed-Sedge CS	Ribstone, Red Deer; Leduc, Lloydminster, Andrew
	CPC19 Juniper/Little Club Moss/Needle and Thread CS	Ribstone, Lloydminster, Provost
	CPD15 Plains Wormwood/Sandgrass/Aspen CS	Ribstone, Lloydminister, Provost
	CPC18 Juniper/Bearberry/Sandgrass CS and Sa	Ribstone, Lloydminster, Vermillion
	CPC17 Juniper/Sandgrass-Sedge-Plains Rough Fescue CS and Sa	Ribstone, Lloydminster, Vermillion
	CPD1 Aspen/Juniper/Sedge CS and Sa	Ribstone, Lloydminster, Provost
	CPD2 Aspen/Juniper/Kentucky Bluegrass-Sedge CS and Sa	Ribstone, Lloydminster, Provost
	CPC3 Bebb Willow-Rose/Slender Wheat Grass CS and Sb	Ribstone, Lloydminster, Provost
	CPC2 Water Birch-Juniper CS (Sb)	Ribstone, Lloydminster, Provost
	CPA7 Sandgrass-Needle and Thread Grass-June Grass Sa and CS	Ribstone, Provost, Vermillion, Lloydminister
Sands (Sa)	CPC16 Juniper/Sedge-Plains Rough Fescue Sa	Ribstone, Lloydminster, Provost, Vermillion
	CPC24 Narrow leaved meadowsweet-Aspen Sa (CS and Sy)	Ribstone, Lloydminster, Provost, Vermillion
	CPA47 Plains rough fescue- Sand grass Sa (CS and Sy	Ribstone, Lloydminster, Provost, Vermillion
	CPA48 Blue grama-Sand grass-Needle and Thread Sa (CS and Sy)	Ribstone, Lloydminster, Provost, Vermillion
	CPA11 Needle and Thread/Fringed Sage-Little Club Moss Sy (Sa)	Ribstone, Vermillion, Provost, Lloydminister
Sandy (Sy)	CPA8 Upland Sedge-June Grass-Needle and Thread Grass Sy (Sa)	Ribstone, Vermillion, Provost, Lloydminister, Sedgewick
	CPA33 Sheep Fescue-Needle and Thread-June Grass Sy (CS, Sa)	Ribstone, Vermillion, Provost, Lloydminister
	CPA6 Western Porcupine Grass-Rough Fescue Sy(Sa)	Ribstone, Vermillion, Provost, Lloydminister, Sedgewick
	CPA49 Western Porcupine Grass-Plains Rough Fescue Sy (Lo and Sa)	Ribstone, Vermillion, Provost, Lloydminister
	CPA50 Western Porcupine Grass-Plains Rough Fescue Sy (Lo and Sa)	Ribstone, Vermillion, Provost, Lloydminister
	CPA51 Kentucky Bluegrass-Western Porcupine Grass Sy (Lo and Sa)	Ribstone, Vermillion, Provost, Lloydminister
	CPA52 Slender Wheat Grass-Kentucky Bluegrass Sy (Lo and Sa)	all
	CPC1 Silverberry-Chokecherry/June Grass-Sand Grass Sy	Ribstone, Vermillion, Provost, Lloydminister
	CPC7 Choke cherry-Saskatoon/Smooth brome Sy (Sb, Lo)	all
	CPC21 Snowberry-Silverberry/Needle and Thread-Kentucky bluegrass Sy (Sa)	Ribstone, Vermillion, Provost, Lloydminister
	CPC22 Rose-Silverberry/Kentucky Bluegrass Sy (Sa and Lo)	Ribstone, Vermillion, Provost, Lloydminister
	CPD3 Aspen/Snowberry-Chokecherry-Saskatoon Sy (Sa, CS, Lo)	all
	CPD4 Aspen/Snowberry/Smooth Brome-Kentucky Bluegrass Sy (Sa, CS, Lo)	all

Range or GVI Site	Range Plant Community	Ecodistrict
	CPD20 Aspen/Bearberry/Purple oatgrass-Sedge Sy (Sa and CS)	Ribstone, Vermillion, Provost, Lloydminister
	CPD16 Snowberry-Choke Cherry/Kentucky Bluegrass-Smooth Brome/Aspen Sy (Sa, CS, Lo)	all
	CPD17 Choke Cherry-Snowberry-Saskatoon/Aspen Sy (Sa, CS, Lo)	all
	CPD18 Snowberry/Aspen Sy (Cl,Lo)	all
	CPB5 Crested Wheatgrass Sy (Sa,CS,Lo)	Ribstone, Vermillion, Sedgewick, Provost
	CPA2 Rough Fescue-Upland Sedge (Solonetzic Type) BlO (Lo)	Daysland, Sedgewick, Vermillion, Bashaw
Loamy (Lo)	CPA3 Rough Fescue-Western Porcupine Grass-Upland Sedge Lo (Sy)	Ribstone, Provost, Lloydminister, Vermillion
	CPA4 Upland Sedge-Western Wheat Grass Lo (Sy and Li)	Provost, Ribstone, Vermillion, Bashaw, Daysland
	CPA5 Kentucky Bluegrass-Western Porcupine Grass Lo (Sy, Sa)	Provost, Vermillion, Daysland, Lloydminister, Ribstone, Sedgewick, Bashaw, Pine Lake
	CPA34 Blue Grama-Western Porcupine Grass/Pasture Sage Lo (TB)	Provost, Vermillion, Daysland, Lloydminister, Ribstone, Sedgewick, Bashaw
	CPA32 Kentucky Bluegrass-Sedge-Western Porcupine Grass Lo (Sy)	all
	CPA46 Kentucky Bluegrass-Smooth Brome Lo (Sy)	all
	CPB1Alfalfa/Smooth Brome-Kentucky bluegrass	all
	CPB2 Kentucky Bluegrass-Smooth Brome	all
	CPB3 Snowberry/Kentucky Bluegrass-Smooth Brome Lo (Sy)	all
	CPB4 Meadow Brome	all
	CPI2 Creeping Red Fescue-Kentucky Bluegrass Lo	all but Provost and Ribstone
	CPI3 Kentucky Bluegrass-Northern Wheatgrass/Dandelion Lo	all but Provost and Ribstone
	CPI4 Slender Wheatgrass-Kentucky Bluegrass Lo	all but Provost and Ribstone
	CPI5 Smooth Brome-Kentucky Bluegrass Lo	all but Provost and Ribstone
	CPI6 Timothy-Smooth Brome Lo	all but Provost and Ribstone
	CPA27 Kentucky Bluegrass-Slender Wheatgrass Lo	all but Provost and Ribstone
	CPA25 Plains Rough Fescue Lo	all but Provost and Ribstone
	CPA26 Rough Fescue-Kentucky Bluegrass Lo	all but Provost and Ribstone
	CPC29 Snowberry/Rough Fescue Lo	all
	CPC30 Snowberry/Rough Fescue-Kentucky Bluegrass Lo	all
	CPC32 Snowberry/Kentucky bluegrass Lo (Cy and Sy)	all
	CPC5 Snowberry-Silverberry/Rough Fescue-Western Porcupine Grass Lo (Sy)	all
	CPC6 Snowberry-Silverberry/Kentucky bluegrass Lo (Sy)	all
	CPC31 Silverberry/Awned Wheat Grass Lo	Pine Lake, Olds, Sedgewick,Vermillion, Leduc, Daysland, Bashaw, Ribstone
	CPD13 Aspen/Snowberry-Rose Lo	all
	CPD14 Aspen/Beaked Hazelnut Lo and Sy	Red Deer, Olds, Leduc, Pine Lake, Bashaw

Range or GVI Site	Range Plant Community	Ecodistrict
Clayey (Cy)	CPD28 Aspen/Snowberry/Awned Wheatgrass Lo	Pine Lake, Red Deer, Leduc, Bashaw, Vermilion, Lloydminister
Overflow (Ov)	CPE2 White spruce/Moss Lo (Sb, TB, SwG, Ov)	Red Deer, Ribstone, Pine Lake, Leduc, Olds
Saline Lowlands (SL)	CPA1 Western Wheatgrass-Alkali Bluegrass Cy and BlO	Ribstone
	CPC4 Silver Sagebrush/Western Wheat Grass Ov (BlO)	Ribstone, Sedgwick, Vermillion, Daysland, Bashaw and rare in S of Pine Lake along RDR
	CPA20 Kentucky Bluegrass-Salt Grass SL	all
	Cond14 Samphire Salt Flats SL LenA	all
	CPA40 Baltic rush-salt grass SL (Sb, LenA)	all
	CPA41 Foxtail barley-Nuttall's salt meadow grass SL (Sb, LenA)	all
	CPA42 Salt grass-Foxtail barley-Nuttal's salt meadow grass SL (Sb, LenA)	all
	CPA43 Salt grass-Foxtail barley SL (Sb, LenA)	all
	CPA44 Awned wheatgrass- Salt grass SL (Sb, LenA)	all
	CPA45 Alkali cordgrass-Baltic rush SL (Sb, LenA)	all
Sub-irrigated (Sb)	CPA29 Kentucky Bluegrass-Wire Rush/Perennial Sow Thistle Sb	
	CPA19 Foxtail Barley Sb	all
	CPA28 Garrison's Meadow Foxtail/Canada Thistle Sb	Daysland Plain
	CPA10 Reed Grass Sb	all
	CPA18 Garrison's Meadow Foxtail	all
	CPC8 Water Birch-Red Osier Dogwood Sb LtcD	Bashaw
	CPC12 Silverberry/Narrow Reed Grass Sb LtcD	Bashaw
	CPD11 Balsam poplar-Aspen/Willow Sb	all
	CPD19 Snowberry-Red Osier Dogwood/Aspen-Balsam Poplar Sb	all
	CPD7 Balsam Poplar-Aspen/Smooth Brome Sb	all
	CPD8 Balsam Poplar-Aspen/Snowberry-Kentucky Bluegrass Sb	all
	CPD6 Aspen-Balsam poplar/Saskatoon-Red Osier Dogwood-Snowberry Sb (Lo, Ov)	all
	CPD9 Pb/Hazelnut-Red Osier Dogwood Sb	all
	CPD12 Balsam poplar/Northern Reed Grass Sb	Daysland, Bashaw, Pine Lake
	Ribstone, Vermillion, Provost, Lloydminister	Ribstone, Vermillion, Provost, Lloydminister
	CPA12 Baltic Rush (LenT)	All
	CPE1 Balsam poplar-Aspen/Red Osier Dogwood-Rose Sb and LtcC	Red Deer, Pine Lake, Leduc, Bashaw
Lotic (Lo)	CPE3 White spruce/Horsetail LtcC	Red Deer, Pine Lake, Leduc, olds
	CPC11 Sandbar Willow LtcS	Sedgewick, Vermillion, Loydminister, Red Deer, Pine Lake, Bashaw, Olds, Daysland
	CPD5 Paper Birch/Canada Buffaloberry LtcD	all
	CPD10 White spruce-Aspen/Red Osier Dogwood/Horsetail LtcD, Sb and Ov	all

Range or GVI Site	Range Plant Community	Ecodistrict
	CPC9 Yellow Willow-Red Osier Dogwood LtcS	Olds, Red Deer, Leduc, Pine Lake, Vermillion, Andrew
Lentic (Lent)	Cond10 Reed Canary Grass-Awned sedge-Narrow reed grass	all
	CPA24 Marsh Ragwort Len	all but Provost and Ribstone
	CPA13 Three Square Rush LenA	all
	CPA14 Awned Sedge LenS and LenSP	All
	CPA15 Beaked Sedge LenSP	all
	CPA21 Reed Canary Grass LenT and LtcH and Sb	all
	CPA22 Tall Manna Grass LenS and LenSP and LtcH (Sb)	All
	CPA23 Tufted Hair Grass LenT	all but Provost, Lloydminister, Vermillion and Ribstone
	CPC13 Basket Willow/Marsh Reed Grass LenSP and LtcS	all
	CPC14 Basket Willow/Kentucky Bluegrass LenSP and LTcS	all
	CPC15 Basket Willow/Rose-Snowberry/Sedge LenS and LenT	Ribstone, Provost, Lloydminister, Vermillion
	CPC20 Willow-Bog Birch/Sedge LenSP	all
	CPA17 Cattails LenSP	all
	CPA16 Great Bulrush LenSP and LtcH	all

11.0.3 Detailed Plant Community Data

Table 14. Ecological Sustainable Stocking Rates based on Plant Community Type

Plant Community Number	ESSR (AUM/ac)	ESSR range (AUM/ac)	ESSR (ha/AUM)	ESSR range (ha/AUM)
CPA1	0.32	0.10-0.40	1.25	4.05-1.01
CPA2	0.27	0.22-0.30	1.50	1.80-1.34
CPA3	0.35	0.27-0.45	1.15	1.49-0.89
CPA4	0.30	0.18-0.35	1.34	2.24-1.15
CPA5	0.29	0.27-0.35	1.39	1.50-1.15
CPA6	0.35	0.30-0.40	1.16	1.35-1.01
CPA7	0.25	0.15-0.30	1.62	2.70-1.34
CPA8	0.30	0.20-0.35	1.35	2.02-1.16
CPA9	0.15	0.05-0.20	2.70	8.10-2.02
CPA10	0.30	0.15-0.40	1.34	2.69-1.01
CPA11	0.20	0.15-0.25	2.00	2.70-1.61
CPA12	0.20	0.10-0.30	2.02	4.04-1.34
CPA13	0.20	0.10-0.40	2.02	4.04-1.01
CPA14	0.35	0.20-0.51	1.15	2.02-0.80
CPA15	0.10	0.01-0.20	4.04	40.46-2.02
CPA16	0.00		0.00	
CPA17	0.00		0.00	
CPA18	1.23	0.81-2.02	0.33	0.50-0.20
CPA19	0.60	0.10-1.01	0.67	4.00-0.40
CPA20	0.30	0.20-0.35	1.34	2.02-1.15
CPA21	0.10	0.01-0.2	4.04	40.46-2.02
CPA22	0.20	0.10-0.51	2.00	4.04-0.80
CPA23	0.20	0.15-0.25	2.00	2.70-1.60
CPA24	0.10	0.05-0.15	4.04	8.09-2.69
CPA25	0.35	0.25-0.45	1.15	1.61-0.89
CPA26	0.30	0.25-0.45	1.34	1.61-0.89
CPA27	0.30	0.25-0.45	1.34	1.61-0.89
CPA28	0.81	0.51-1.50	0.50	0.80-0.27
CPA29	0.30	0.20-0.60	1.34	2.02-0.67
CPA30	0.40	0.20-0.60	1.01	2.02-0.67
CPA32	0.25	0.10-0.30	1.61	4.04-1.34
CPA33	0.22	0.10-0.30	1.84	4.05-1.35
CPA34	0.20	0.10-0.30	2.02	4.04-1.34
CPA40	0.20	0.10-0.25	2.02	4.04-1.61
CPA41	0.20	0.10-0.25	2.02	4.04-1.61
CPA42	0.20	0.10-0.25	2.02	4.04-1.61
CPA43	0.20	0.10-0.25	2.02	4.04-1.61
CPA44	0.25	0.15-0.30	1.61	2.69-1.34
CPA45	0.25	0.15-0.30	1.61	2.69-1.34
CPA46	0.30	0.20-0.40	1.34	2.02-1.01
CPA47	0.28	0.15-0.32	1.44	2.70-1.26
CPA48	0.25	0.15-0.30	1.62	2.70-1.34
CPA49	0.35	0.30-0.45	1.15	1.34-0.89
CPA50	0.35	0.30-0.45	1.15	1.34-0.89
CPA51	0.30	0.20-0.40	1.34	2.02-1.01

Plant Community Number	ESSR (AUM/ac)	ESSR range (AUM/ac)	ESSR (ha/AUM)	ESSR range (ha/AUM)
CPA52	0.30	0.20-0.40	1.34	2.02-1.01
COND10	0.25	0.20-0.40	1.61	2.02-1.01
COND14	Non- use community			
CP12	0.30	0.25-0.51	1.34	1.61-0.80
CP13	0.30	0.25-0.51	1.34	1.61-0.80
CP14	0.25	0.20-0.40	1.61	2.02-1.01
CP15	0.35	0.30-0.60	1.15	1.34-0.67
CP16	0.35	0.30-0.60	1.15	1.34-0.67
CPB1	0.40	0.67-0.33	1.01	0.60-1.23
CPB2	0.71	0.40-0.90	0.57	1.01-0.45
CPB3	0.71	0.40-0.90	0.57	1.01-0.45
CPB4	0.81	0.6-1.01	0.50	0.67-0.40
CPB5	0.71	0.51-1.01	0.57	0.80-0.40
CPC1	0.27	0.13-0.40	1.50	3.00-1.00
CPC2	0.22		1.80	
CPC3	0.16		2.50	
CPC4	0.21	0.16-0.27	1.90	2.50-1.50
CPC5	0.25	0.16-0.35	1.81	2.50-1.15
CPC6	0.25	0.16-0.35	1.81	2.50-1.15
CPC7	0.22		1.80	
CPC8	0.15	0.05-0.25	2.69	8.09-1.61
CPC9	0.18	0.14-0.22	2.20	2.80-1.80
CPC10	0.18	0.14-0.30	2.24	2.89-1.34
CPC11	0.10	0.05-0.15	4.04	8.09-2.69
CPC12	0.20	0.16-0.27	2.00	2.50-1.50
CPC13	0.05	0.01-0.15	8.09	40.00-2.69
CPC14	0.15	0.10-0.25	2.69	4.04-1.61
CPC15	0.24	0.20-0.27	1.70	2.00-1.50
CPC16	0.16	0.10-0.20	2.50	4.05-2.02
CPC17	0.15	0.10-0.25	2.70	4.05-1.62
CPC18	0.16	0.10-0.30	2.52	4.04-1.34
CPC19	0.20	0.15-0.30	2.00	2.69-1.34
CPC20	0.01	0.01-0.10	40.00	40.00-4.04
CPC21	0.30	0.20-0.40	1.34	2.02-1.01
CPC22	0.30	0.20-0.40	1.34	2.02-1.01
CPC23	0.30	0.20-0.40	1.34	2.02-1.01
CPC24	0.25	0.15-0.30	1.61	2.69-1.34
CPC29	0.25	0.15-0.35	1.61	2.69-1.15
CPC30	0.25	0.15-0.35	1.61	2.69-1.15
CPC31	0.30	0.20-0.40	1.34	2.02-1.01
CPC32	0.30	0.20-0.40	1.34	2.02-1.01
CPD1	0.15	0.10-0.25	2.70	4.00-1.60
CPD2	0.15	0.10-0.25	2.69	4.04-1.61
CPD3	0.20	0.15-0.30	2.02	2.69-1.34
CPD4	0.25	0.15-0.35	1.61	2.69-1.15
CPD5	0.10	0.01-0.20	4.04	40.46-2.02
CPD6	0.15	0.10-0.20	2.69	4.04-2.02
CPD7	0.25	0.20-0.30	1.61	2.02-1.34

Plant Community Number	ESSR (AUM/ac)	ESSR range (AUM/ac)	ESSR (ha/AUM)	ESSR range (ha/AUM)
CPD8	0.20	0.15-0.25	2.02	2.69-1.61
CPD9	0.15	0.10-0.30	2.69	4.04-1.34
CPD10	0.15	0.10-0.20	2.69	4.04-2.02
CPD11	0.20	0.15-0.25	2.02	2.69-1.61
CPD12	0.20	0.10-0.25	2.02	4.04-1.61
CPD13	0.20	0.15-0.35	2.02	2.69-1.15
CPD14	0.18	0.15-0.25	2.20	2.69-1.61
CPD15	0.10	0.10-0.25	4.04	4.04-1.61
CPD16	0.18	0.15-0.30	2.20	2.69-1.34
CPD17	0.18	0.15-0.30	2.20	2.69-1.34
CPD18	0.18	0.15-0.25	2.20	2.69-1.61
CPD20	0.15	0.10-0.25	2.69	4.04-1.61
CPD21	0.17	0.15-0.25	2.38	2.69-1.61
CPD28	0.20	0.15-0.25	2.00	2.69-1.61
CPE1	0.15	0.05-0.20	2.69	8.09-2.02
CPE2	0.10	0.05-0.15	4.04	8.09-2.69
CPE3	0.05	0.01-0.10	8.09	40.00-4.04

Table 15 Range Plant Communities in Correspondence to Range Reference Areas (as of 2012 survey)

Range Plant Community	Range Reference Area Exclosure	Range Reference Area Grazed
CPC17: Juniper/ Sand grass- Sedge	Capt. Ayre Lake	Capt. Ayre Lake
CPA49: Western porcupine grass/ Plains rough fescue	Czar	Czar
CPA6: Upland sedge- Western porcupine grass	Battle River Ridge Delusion Lake Metiskow	Battle River Ridge Delusion Lake Metiskow
CPA2: Plains rough fescue- Western wheat grass	Donalda	Donalda
CPA25: Plains rough fescue	Torlea E Torlea W Bruce Paradise valley	
CPA26: Plains rough fescue- Kentucky bluegrass	Bell's Hill Big Valley Jake's Butte	Bell's Hill Big Valley Jake's Butte Bruce
CPA3: Plains rough fescue- Western porcupine grass	Bruce lake Grizzly Bear Creek Kitscoty Setting Sun	Bruce lake Grizzly Bear Creek Kitscoty
CPA6: Upland sedge- Kentucky bluegrass	Alliance Lea Park	Windy Lake
CPC30: Snowberry/ Plains rough fescue- Kentucky bluegrass	Battle River Clandonald	