

**Natural Community Inventory Within Landscapes of the Northern Great  
Plains Steppe Ecoregion of the United States**

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A Report to the Natural Resource Conservation Service, Northern Plains Regional Office

June 1998

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## **Acknowledgements**

The Nature Conservancy and the Natural Heritage Programs of Montana, Nebraska, North Dakota, South Dakota, and Wyoming gratefully acknowledge the Natural Resource Conservation Service, Great Plains Office for the financial support to conduct rapid ecological assessments within the landscapes of the Northern Great Plains Steppe ecoregion. We also thank Steve Kettler, Dave Ode, Wayne Ostlie, Paul Pooler, Gerry Steinauer, and Rick Schneider for their assistance in this project.

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## TABLE OF CONTENTS

Acknowledgements.....	iii
Table of Contents.....	v
List of Figures.....	v
List of Tables.....	v
List of Appendices.....	v
Executive Summary.....	vi
Introduction.....	1
Methods.....	4
Results.....	6
Literature Cited.....	16
Appendices.....	17

## LIST OF FIGURES

Figure 1. Map of the Northern Great Plains SteppeEcoregion.....	3
Figure 2. Map of Polygons in the Northern Great Plains Steppe Delineated by Augustana College.....	5
Figure 3. Map of Primary Natural Communities.....	9
Figure 4. Map of Exotic Plant Species Cover Rating within Landscapes.....	10
Figure 5. Map of Land Use Disturbance Rating within Landscapes.....	12
Figure 6. Map of Cropland Conversion Rating within Landscapes .....	13
Figure 7. Map of Preliminary Conservation Significance Rating within Landscapes .....	15

## LIST OF TABLES

Table 1. Primary Natural Communities of Landscapes Inventoried in the Northern Great Plains Steppe, Frequency, and Acres of Landscapes in which they were Identified as a Primary Natural Community.....	7
Table 2. Summary of Exotic Species Composition, Land-use Disturbance, Cropland Conversion, and Preliminary Conservation Ratings in the Northern Great Plains Steppe.....	11

## LIST OF APPENDICES

Appendix A. Rapid Ecological Assessment Polygon Summary Form and Description of Fields.....	17
Appendix B. Rapid Ecological Assessment Polygon Summaries.....	19
Appendix C. Natural Community Associations and Frequency of Occurrence within Polygons Sampled in the Northern Great Plains Steppe Ecoregion.....	208

*In the larger context of conserving biological diversity in agricultural and natural ecosystems in North America, prairies are a priority, perhaps the highest priority. It is time to bring a measure of prairie conservation to the forefront.*

Fred B. Samson and Fritz L. Knopf, *Bioscience*

## **EXECUTIVE SUMMARY**

Natural communities constitute a significant component of biological diversity in the northern Great Plains. However, relatively limited information is available on the location and extent of natural communities in this region. The Nature Conservancy, Natural Resource Conservation Service, and state Natural Heritage Program partners collaborated to complete a strategically-focused inventory of the Northern Great Plains Steppe ecoregion in 1997. The inventory efforts focused on identification of natural communities and threats to those communities in relatively intact landscapes, defined as areas generally larger than 50 square miles of relatively natural vegetation. Over 53 million acres were inventoried using rapid ecological assessment techniques. A summary of those inventory efforts is contained within this report. It is anticipated that this information will inform future inventory efforts and provide resource managers with perspectives on large landscape patterns in the northern Plains.

## INTRODUCTION

### Ecoregional Conservation

In recent years, a consensus has emerged within the international conservation community about the importance of planning and working at larger geographic scales to conserve biodiversity. Responding to these new developments, federal and state agencies and non-governmental organizations, including The Nature Conservancy, have begun to consider planning and actions at the landscape scale. In 1996, the Conservancy adopted an approach of conservation planning and action at the ecoregional level (The Nature Conservancy 1996). Ecoregions are large units of land and water delineated by biotic and environmental factors which regulate the structure and function of ecosystems within them. Conservation planning within the framework of an ecoregion ensures that all elements of biodiversity within the ecoregion are addressed in an ecological context. Ecoregion units appropriate for conservation planning in the U.S. were delineated by Bailey et al. (1994) at the province level. These boundaries were modified by The Nature Conservancy's Ecoregional Working Group to arrive at the organization's ecoregional map of the United States (The Nature Conservancy 1997).

Conservation planning and action at all scales is dependent upon information relating to the location and extent of conservation targets. Conservation has traditionally focused on single species strategies; however, these were often based on localized site considerations which did not evaluate or offer opportunities to conserve other species in jeopardy. To work at ecoregional or other large scales, ecologists have recognized the need to focus conservation actions on maintaining ecological processes and natural habitat as a means of conserving many species, both rare and common. Natural communities are useful in the conservation of multiple species because they reflect the ecological processes operating across the landscape and they can serve as surrogates in areas where little is known about distributions of species (Faber-Langendoen et al. 1997).

Relative to adjacent areas, there have been few in-depth biological inventories completed in the northern Great Plains by Natural Heritage Program staff or other biologists for natural communities. This dearth of inventory information is perhaps greatest in the Northern Great Plains Steppe ecoregion, the largest in the Great Plains. For example, the Conservancy's National Terrestrial Community Classification has identified at least 323 distinct natural community types within the ecoregion (occurring within 154 alliances), but only 1,000 occurrences representing these community types have been documented by the Heritage Network within the ecoregion.

Three purposes were identified for this project. First, collect information to begin filling the tremendous data gaps that exist for natural communities in the northern Great Plains. This information will prove useful in landscape level decisions across the northern Plains for the natural communities themselves, as well as-for multi-species conservation approaches. Also, it will serve to strengthen the data available for rangewide community analyses and conservation efforts. Second, provide information useful for improving the current classification of natural community types, which forms the basis for a national standard adopted by the Federal Geographic Data Committee. Improving this classification is required for effective exchange of information and crosswalking with other classification systems, such as the NRCS Ecological Site Descriptions. The community classification is an evolving system and inventories such as this are crucial for enhancing its integrity.

Third, identify current land-use practices, disturbances, and threats. This information is critical to better inform conservation action and develop threat abatement strategies required to sustain the diversity of natural communities and associated species within the ecoregion.

### Northern Great Plains Steppe

The Northern Great Plains Steppe occurs within the northern portion of Bailey's (1995) Great Plains-Palouse Dry Steppe province (Fig. 1), extending from Montana to northwestern Nebraska. In all, the ecoregion encompasses portions of five states (Montana, North Dakota, South Dakota, Wyoming and Nebraska). Included within the planning unit are four ecoregion sections: Northwestern Glaciated Plains, Northern Glaciated Plains, Northwestern Great Plains and Powder River Basin (Bailey 1995). The Black Hills are a distinct province-level island within the ecoregion. For purposes of this study, the Canada portion of the ecoregion was omitted.

The Northern Great Plains Steppe encompasses a variety of landforms and soils. Continental glaciation shaped much of the Northwestern Glaciated Plains and Northern Glaciated Plains sections. Landforms in these sections are generally characterized as level to rolling till plains and areas of kettles, kames and moraines (McNab and Avers 1994). Soils are predominantly frigid Borolls, Ustochrepts, Natriborolls and Orthents derived largely from glacial till. The Northwestern Glaciated Plains also encompasses several island mountain ranges, most notably the Little Rockies, Bear's Paw, and Highwood Mountains, which attain elevations over 7,000 feet. The Northwestern Great Plains and Powder River Basin Sections are predominantly gently sloping to rolling, dissected plains with scattered buttes and badlands. Principle soil types are mesic and frigid Borolls, Ustolls, Orthents, Orthids, Argids and Fluvents derived from Cretaceous and lower-Tertiary marine and non-marine sedimentary rocks.

Mixedgrass prairie is the dominant vegetation type in the ecoregion, with western wheatgrass (*Pascopyrum smithii*), northern wheatgrass (*Elymus lanceolatus* ssp. *lanceolatus*), green needlegrass (*Nasella viridula*), blue grama (*Bouteloua gracilis*), and needle-and-thread (*Stipa comata*) as dominant species. Bluebunch wheatgrass (*Pseudoroegneria spicata* ssp. *spicata*), little bluestem (*Schizachyrium scoparium*), sideoats grama (*Bouteloua curtipendula*), Sandberg's bluegrass (*Poa secunda*) and thread-leaved sedge (*Carex filifolia*) may become locally abundant (Watts 1960, Kuchler 1964, Coupland 1992, Achuff 1994, McNab and Avers 1994). Ponderosa pine (*Pinus ponderosa*) woodlands are common in portions of the Northwestern Great Plains and Powder River Basin Sections.

Although human population densities are sparse in the ecoregion, the area plays a critical role in the United States' agricultural and energy production. As a result, irrigated and dryland cultivation, together with coal, gas, and oil extraction have significantly impacted the natural systems of the ecoregion over the last 100 years. For example, conversion of natural vegetation for crop production has resulted in a 70% decline in total coverage of native vegetation in the Northern Glaciated Plains, whereas areas less suitable for farming have been left relatively intact (e.g. only 20% decline in the Powder River Basin). With historic and current landuse practices, many native species have been significantly impacted, including bison (*Bison bison*), once the most significant herbivore on the Plains, now extirpated from the wild. The decline in black-tailed prairie dog (*Cynomys ludovicianus*) population is estimated to be 98% since European settlement. Other

**Figure 1. Northern Great Plains Steppe Ecoregion**



declining species, to name a few, include the swift fox (*Vulpes velox*), piping plover (*Charadrius melodus*), and a number of fish species associated with the Missouri River and its tributaries.

## METHODS

Rapid Ecological Assessments (REAs) have been employed by programs of the Latin American Conservation Data Centre Network to inventory vast areas for rare species and natural communities over short periods of time at low cost. The Northern Great Plains Steppe ecoregion assessment team fashioned its inventory efforts after this successful model. The goals of the inventory were to identify the natural communities in the ecoregion, describe their location and extent, note their condition, and record current and potential sources and scope of disturbance. The resulting information is at a scale coarser than that used by Heritage Programs to create element occurrence records, but more detailed than the information generally available through the USGS GAP Analysis vegetation cover layers for the ecoregion.

Due to the large size of the ecoregion and limited financial resources, REAs focused on landscapes, defined as large, relatively intact areas of predominantly natural vegetation. Portions of the ecoregion highly fragmented by agriculture and other land uses were not inventoried. Landscapes had been previously identified through a contract with Augustana College (performed at EROS Data Center in Sioux Falls, SD). Thematic Mapper (TM) satellite imagery was utilized to visually delineate polygons (mapped areas synonymous with landscapes) of relatively unfragmented lands. Initially, these polygons were identified for assessment only if they were at least 50 square miles in size and at least 80% natural or semi-natural vegetation (i.e. not agricultural, mining, or urban lands). The minimum area was reduced to 25 square miles in the Northern Glaciated Plains section because of extensive conversion of natural communities for agricultural uses. Two hundred eight landscapes meeting these criteria were identified within the ecoregion, ranging in size from approximately 25 square miles to over 1,500 square miles (Fig. 2).

Rapid Ecological Assessments were conducted by Natural Heritage Program and Conservancy staff, and independent contractors from June through October 1997. Because of the number of identified landscapes, the large amount of land to be inventoried, and the short time permitted for completion, inventory within a given landscape was often restricted to public lands. The added time required to gain permission to access privately-owned lands made inventory of private lands inherently difficult. In areas of predominantly private lands, sampling was restricted to observation close to public roads. Survey routes were identified on 1:100,000-scale maps prior to sampling and were designed for complete geographic coverage of each landscape; however, lack of access resulted in uneven inventory in some landscapes.

Natural communities within each landscape were identified at the association level using two different reconnaissance approaches. The first consisted of selectively establishing stopping points along survey routes. At each stopping point, the ecologist noted plant species composition of the vegetation types present by quickly walking through the area. Efforts were made to disperse the stopping points evenly across the landscape, as access allowed, with at least 10 points per landscape. During the inventory, additional points were added in some landscapes to capture geographically-restricted communities. The second approach utilized "windshield surveys" in which a continuous



road log was used to document the natural communities along stretches of the sampling route. This sampling approach was utilized most extensively in the Powder River section, the most vegetatively intact of the ecoregion. In this approach, ground-truthing of the windshield surveys was limited, and ecologists with considerable field experience relied on identification skills and information from previous on-the-ground work in the area. In both sampling approaches, natural communities were identified using dominant plant species, or the anticipated dominants for degraded communities. The communities were then cross-referenced with the existing community classification and identified. Community types not previously identified in the classification were noted and recorded as potentially new types requiring additional inventory and description.

In addition to the identity of natural communities, ecologists recorded other pertinent biotic and abiotic information, including presence of rare species, presence and abundance of exotic plant species, and current or potential disturbances. These disturbances were characterized in two ways on the sampling forms: (1) by type (e.g. mining, exploration and development of oil and gas), and (2) by extent (percentage of the landscape impacted). A short description of the threats was also given. In addition, each landscape was assigned a cropland conversion rating, which was a subjective evaluation of the potential for private lands now in natural vegetation to be converted to cropland. Also, the quality of the natural communities and the ratings noted above were used to assign a preliminary conservation significance rating. Conservation significance is considered a very preliminary rating, since a limited area of each landscape was inventoried. Recognizing that high quality examples of natural communities are not restricted to the highest rated landscapes, ecologists also identified geographic areas or specific locations of high quality natural communities within landscapes as "outstanding sites". Complete descriptions of these fields are provided in Appendix A.

## RESULTS

One hundred thirty-two landscapes or sublandscapes (subdivided portions of large landscapes) were inventoried. Summaries for each of the landscapes are presented in Appendix B. These polygons encompass an area of approximately 53 million acres, or roughly half of the total land area of the Northern Great Plains Steppe ecoregion.

Two hundred twenty-nine natural community associations were identified among the 1,621 community occurrences recorded (Appendix C). One hundred sixty-five of these associations were present in the community classification for the ecoregion, whereas, 64 associations were not listed. These "new" associations may represent previously undescribed associations, communities not previously identified or anticipated to occur within the ecoregion, or misidentified examples of existing natural communities.

In addition to listing the natural communities, ecologists identified a primary and secondary natural community for each landscape based on the area covered. Primary natural communities represented the most extensive natural community within a landscape, based on visual estimation and frequency of sample locations. Nineteen different associations were identified as primary natural communities (Table 1). Herbaceous vegetation associations were the most prevalent, followed by shrubland/herbaceous vegetation types. Two associations, *Pascopyrum smithii* - *Bouteloua*

Table 1. Primary Natural Communities of Landscapes Inventoried in the Northern Great Plains Steppe, Frequency, Landscape Acres, and Percentage of Landscape Area in which they were Identified as a Primary Natural Community.

<u>Natural Community</u>	<u>Frequency</u>	<u>Landscape Acres</u>	<u>Percentage of Landscape Area Sampled</u>
Pascopyrum smithii - Bouteloua gracilis/Carex filifolia Herbaceous Vegetation	39	13,497,129	25.1
Pascopyrum smithii - Stipa comata Central Mixedgrass Herbaceous Vegetation	24	12,625,694	23.5
Pascopyrum smithii - Nasella viridula Herbaceous Vegetation	19	5,886,818	11.0
Stipa comata - Bouteloua gracilis - Carex filifolia Herbaceous Vegetation	17	6,791,314	12.6
Elymus lanceolatus - Stipa comata Herbaceous Vegetation	8	1,669,432	3.1
Artemisia tridentata/Pascopyrum smithii Shrub Herbaceous Vegetation	5	5,975,732	11.1
Artemisia tridentata ssp. wyomingensis/Elymus lanceolatus ssp. albicans Shrubland	4	1,139,305	2.1
Pascopyrum smithii - (Elymus trachycaulus) Clay Pan Herbaceous Vegetation	3	757,053	1.4
Artemisia tridentata ssp. wyomingensis/Carex filifolia Shrubland	2	798,650	1.5
Pascopyrum smithii Herbaceous Vegetation	2	1,254,869	2.3
Pinus ponderosa/Pseudoroegneria spicata Woodland	2	453,882	0.8
Artemisia pedatifida/Pascopyrum smithii Dwarf-shrubland	1	721,090	1.3
Calamovilfa longifolia - Carex filifolia Herbaceous Vegetation	1	292,378	0.5
Festuca scabrella - Festuca idahoensis Herbaceous Vegetation	1	689,375	1.3
Juniperus horizontalis/Schizachyrium scoparium Dwarf-shrubland	1	98,626	0.2
Pascopyrum smithii - Koeleria macrantha Herbaceous Vegetation	1	253,581	0.5
Pinus ponderosa/Carex inops ssp. heliophila Woodland	1	122,813	0.2
Populus deltoides - Fraxinus pennsylvanica Forest	1	29,299	0.0
Stipa comata - Koeleria macrantha Herbaceous Vegetation	1	712,853	1.3

*gracilis*/*Carex filifolia* Herbaceous Vegetation and *Pascopyrum smithii* - *Stipa comata* Central Mixedgrass Herbaceous Vegetation, were the two most frequently identified primary natural communities (Fig. 3). These associations represented nearly half of the primary natural communities in both frequency of abundance and area of landscapes inventoried in the ecoregion. In general, associations with *Pascopyrum smithii* were among the most important in the ecoregion. *Pascopyrum smithii* occurred as a dominant species in the three most abundant primary natural communities and as a dominant or co-dominant in 70% of the primary natural communities.

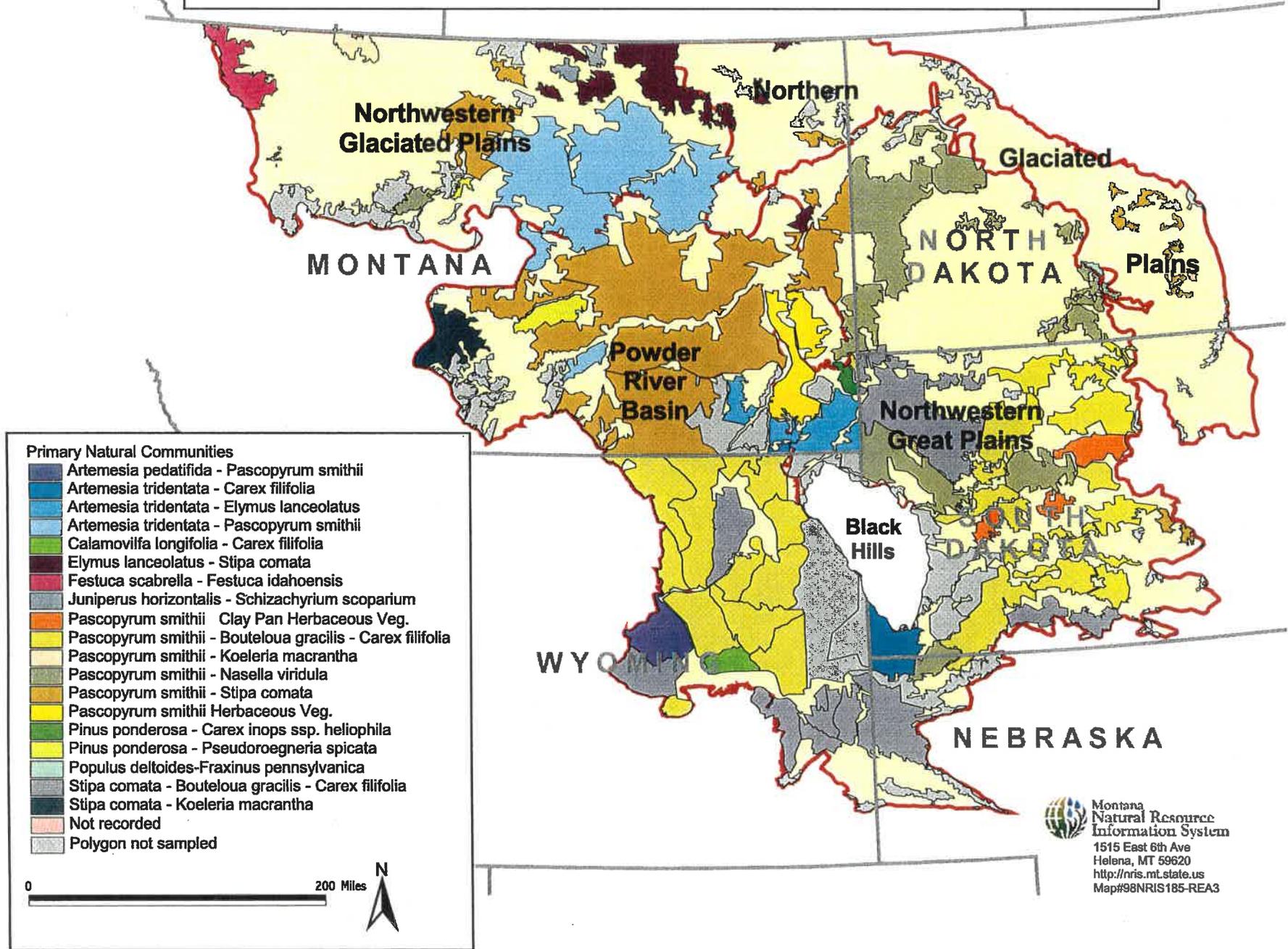
The most widespread threats to terrestrial natural communities and biological diversity in the Northern Great Plains Steppe are exotic plant species invasion, conversion of natural vegetation to alternative land-uses (primarily crop production), and energy extraction activities. Each of these activities were evaluated within each landscape and specific information relating to each is presented in greater detail in Appendix B. Due to variability in data recording, ratings for each of these threats was not assigned for every landscape.

Severity of exotic plant invasion was evaluated in 75 landscapes (Fig 4). Exotics species coverage exceeded 15% in 7 polygons, but the majority of landscapes (26) had less than 2% coverage (Table 2). Most commonly, however, exotic species dominated between 2 and 15 percent of the total canopy cover, with 42 landscapes falling in that category. Exotic species infestation levels were generally highest for several grass species, including *Bromus inermis*, *B. japonicus*, *B. tectorum*, *Agropyron cristatum*, and *Poa pratensis*. *Bromus inermis* and *Agropyron cristatum* are frequently utilized for roadside plantings, hay production, and Conservation Reserve Program perennial cover. The primary noxious weed noted was *Euphorbia esula*, with lesser amounts of *Cirsium arvense* and scattered areas of *Centaurea maculosa*.

Land use disturbance, the prevalence of impacts to natural communities from sources other than livestock grazing and cropping, were rated in 131 landscapes (Fig. 5). Grazing impacts were not recorded due to the difficulty of adequately describing grazing affects, whereas, cropland agricultural is available through mapping information. Over half of the landscapes had little or no land use disturbance, 35 had disturbance of 5 - 20% of the landscape, while 29 were affected by these land uses over 20% or more of the landscape (Table 2). Energy extraction from oil, gas, and coal were the most frequently noted land use disturbances. Surface coal mining, as well as, oil and gas exploration significantly impacted natural communities. Disturbances associated with oil and gas development included conversion of natural communities by extensive road networks, pipelines, well pads, and associated handling and storage facilities, and degradation of the natural vegetation by fragmentation and introduction of exotic species. Heavily-disturbed landscapes were concentrated in the Powder River Basin and portions of the Northwestern Great Plains sections. High disturbance ratings were also assigned in portions of the Northern Glaciated Plains section. Disturbances in this section were often associated with human settlement and development, such as homesteads or associated buildings, rock piles, and extensive road networks. The frequency of these disturbances across the landscapes resulted in significant fragmentation of natural vegetation.

Cropland conversion, a subjective evaluation of potential conversion of natural vegetation for crop production on private land, was rated in 127 landscapes (Fig. 6). In the majority of landscapes (74), 5 to 25% of private lands were identified as tillable (Table 2). Ecologists estimated that greater

Figure 3. Primary Natural Communities



**Figure 4. Map of Exotic Plant Species Rating within Landscapes**

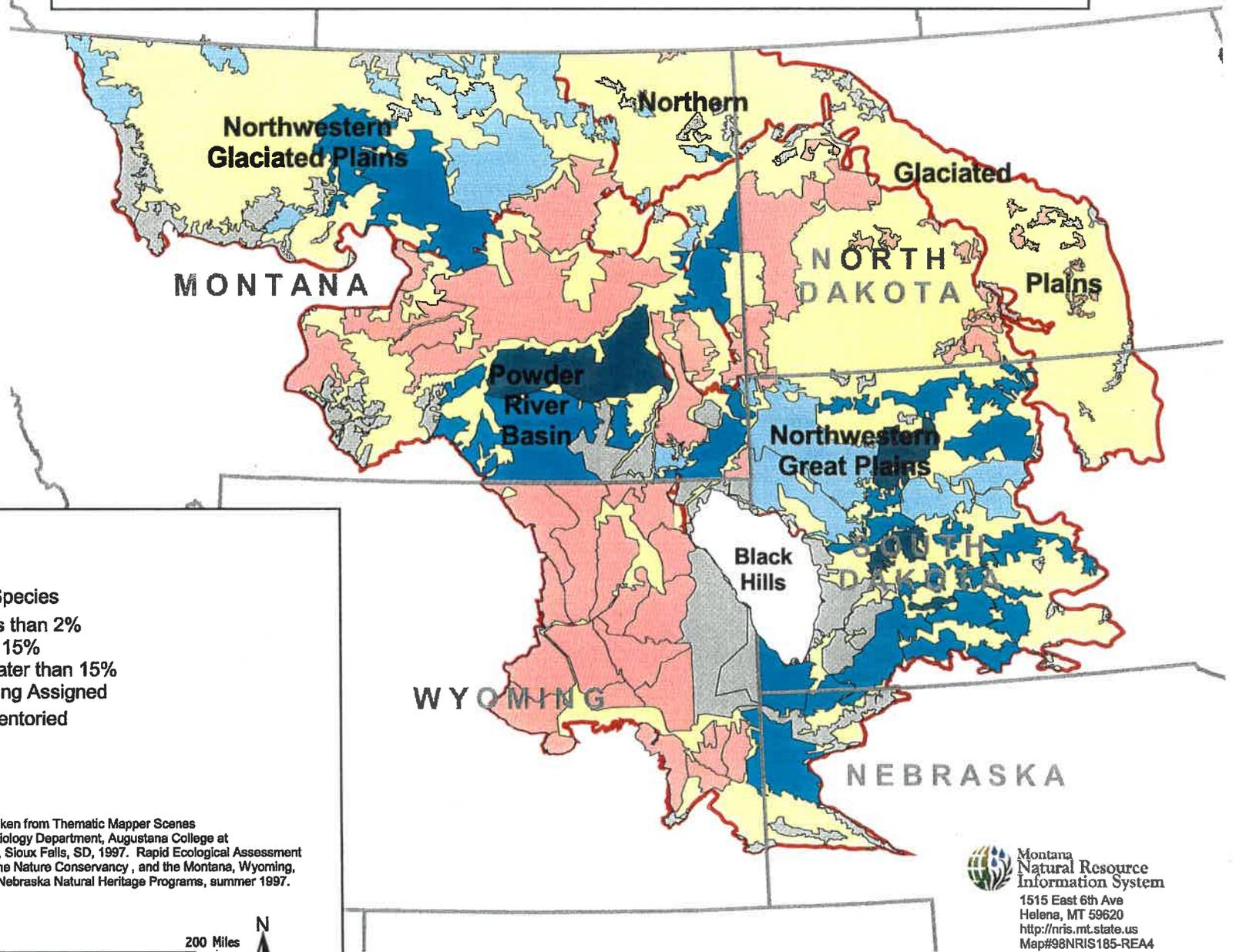


Table 2. Summary of Exotic Species Composition, Land-use Disturbance, Cropland Conversion, and Conservation Significance Ratings in the Northern Great Plains Steppe.

<u>Landscape Attribute Rating</u>	<u>Frequency</u>	<u>Relative Frequency (%)</u>	<u>Landscape Acres</u>	<u>Percentage of Area</u>
<b>Exotic Species<sup>1</sup></b>				
1	26	34.7	10,367,256	34.7
2	42	56.0	15,947,287	53.3
3	7	9.3	3,577,925	12.0
<b>Disturbance<sup>2</sup></b>				
1	67	51.5	30,661,084	57.4
2	35	26.7	15,604,702	29.2
3	29	22.4	7,143,568	13.4
<b>Cropland Conversion<sup>3</sup></b>				
1	28	22.1	8,649,214	16.9
2	74	58.2	35,177,745	68.7
3	25	19.7	7,353,431	14.4
<b>Conservation Significance<sup>4</sup></b>				
1	32	24.4	24,230,805	45.3
2	56	42.8	20,296,597	38.0
3	43	32.8	8,954,544	16.7

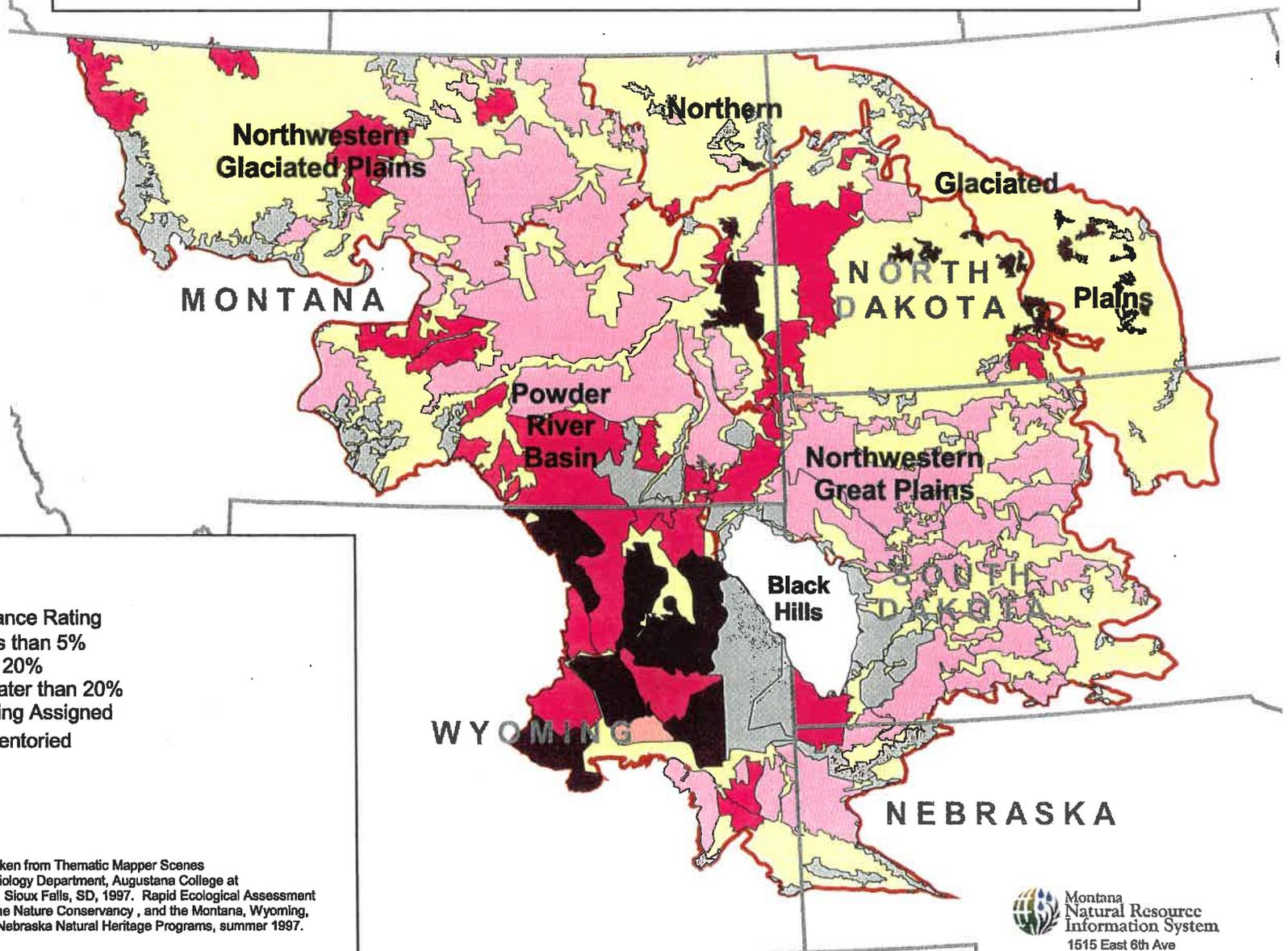
<sup>1</sup> Cover of exotic species within a landscape; ratings are: 1=less than 2%, 2=2-15%, 3=greater than 15%.

<sup>2</sup> Area of disturbance to natural vegetation other than agriculture; ratings are: 1= less than 5%, 2=5-20%, 3=greater than 20%

<sup>3</sup> Potential area of natural vegetation in private ownership that could be converted to cropland; ratings are: 1=less than 5%, 2=5-25%, 3=greater than 25%.

<sup>4</sup> Preliminary evaluation of a landscapes conservation significance based on the quality of natural communities and other ratings; ratings are: 1=high conservation significance, 2=medium conservation significance, 3=low conservation significance.

**Figure 5. Land Use Disturbance Rating within Landscapes**



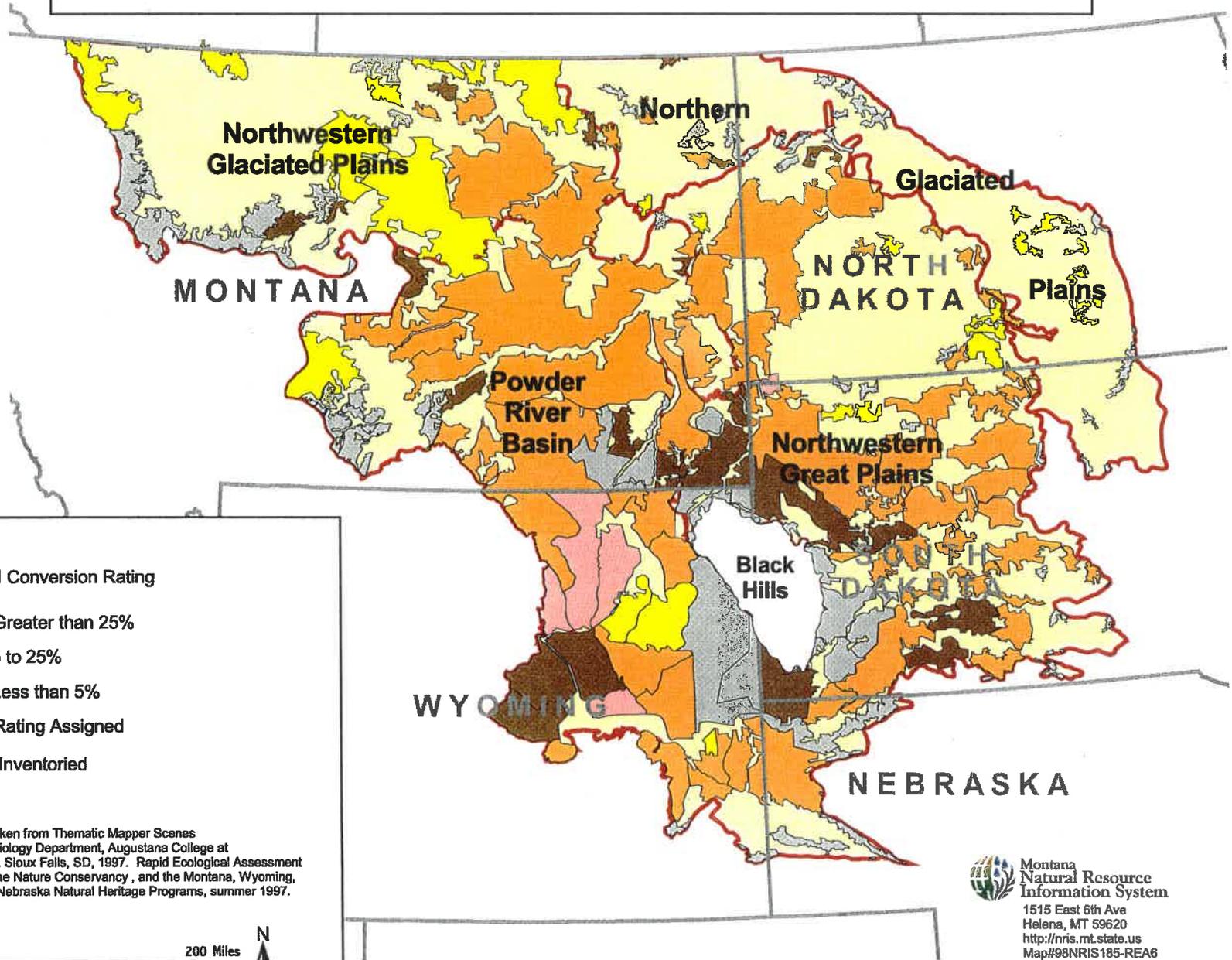
- REA Disturbance Rating**
- 1 - Less than 5%
  - 2 - 5 to 20%
  - 3 - Greater than 20%
  - No Rating Assigned
  - Not Inventoried

**Source**  
 Untilled polygons taken from Thematic Mapper Scenes  
 Interpreted by the Biology Department, Augustana College at  
 EROS Data Center, Sioux Falls, SD, 1997. Rapid Ecological Assessment  
 data gathered by The Nature Conservancy, and the Montana, Wyoming,  
 North Dakota, and Nebraska Natural Heritage Programs, summer 1997.




**Montana  
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 Information System**  
 1515 East 6th Ave  
 Helena, MT 59620  
<http://nris.mt.state.us>  
 Map#98NRIS185-REA5

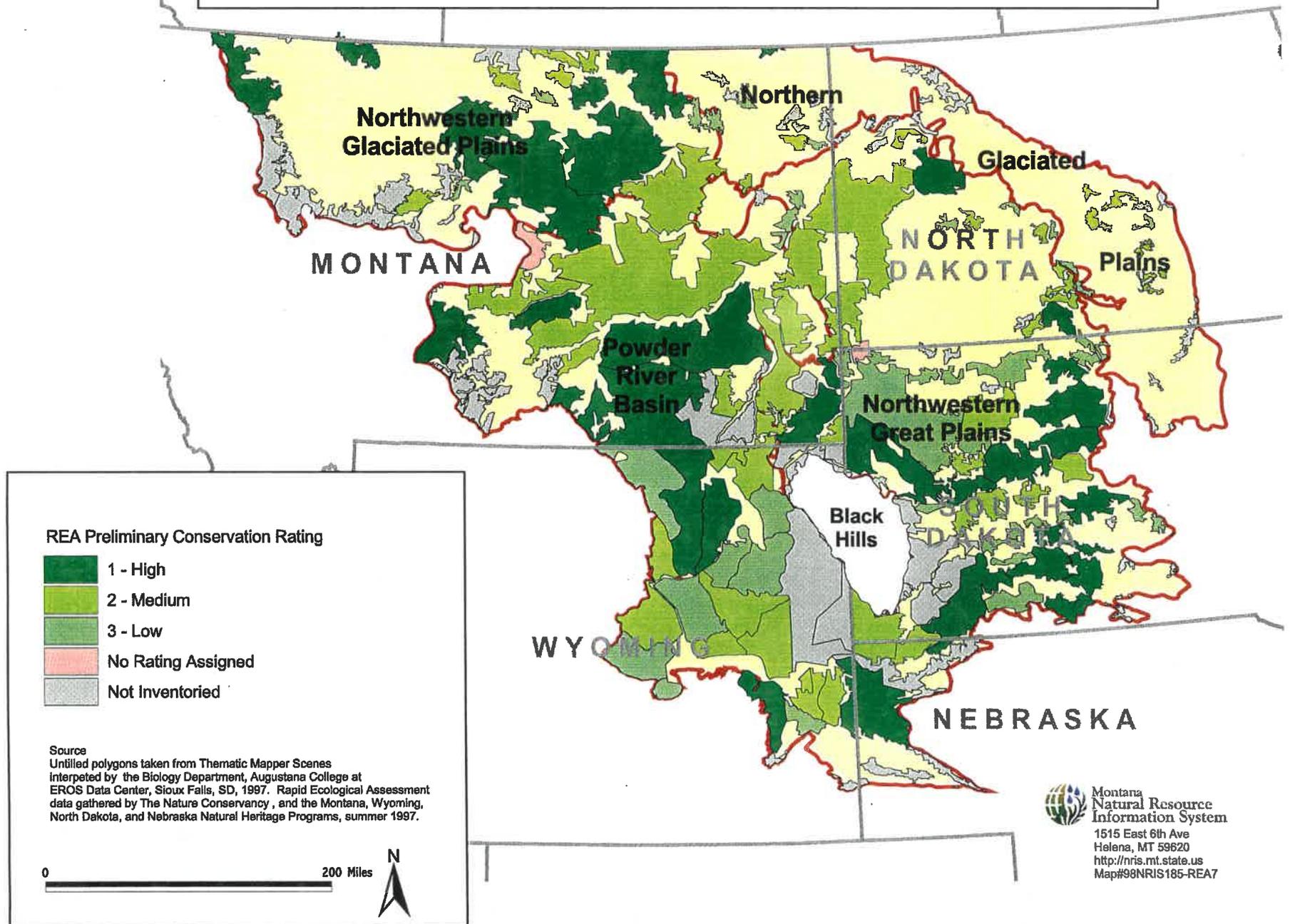
Figure 6. Cropland Conversion Rating within Landscapes



than 25% of private lands could be converted for crop production in 28 landscapes, whereas less than 5% of the land could be converted on private land in 25 of the polygons. Due to the intermingled nature of public and private lands within polygons it is difficult to determine an approximate acreage of tillable lands remaining in the ecoregion; however, it appears, based on the large land area covered through sampling, that extensive acreages of private lands could potentially be converted for crop production.

Thirty-two of the landscapes were preliminarily identified as having a high level of conservation significance, whereas, 56 were identified as moderate, and 42 low (Table 2); however, nearly 50% of the land area sampled was identified as having a high level of conservation significance, whereas less than 17% were rated as low quality. In general, it appears that low quality polygons were more often smaller in size; conversely, several very large polygons over 500,000 acres were classified as high quality (Fig. 7). Although a correlation was not tested between landscape area and conservation significance, conservation theory has consistently noted the benefits of large areas of natural vegetation for maintaining processes and species diversity.

**Figure 7. Preliminary Conservation Significance Rating within Landscapes**



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**Land-use Disturbance Rating:** Rates the level of disturbance from land-use practices other than crop agriculture and livestock grazing. These include activities such as mining, oil and gas, subdivision, diversion and drainage. This is a cumulative rating for all disturbance types. Rating system:

1. Less than 5% of polygon affected by these land-uses
2. More than 5% but less than 20% of polygon affected by these land-uses
3. More than 20% of polygon affected by these land-uses

**Land-use Disturbance Comments:** Commentary about land-use disturbance.

**Cropland Conversion Rating:**

Rates, in the ecologist's opinion, the potential for private lands to be converted for crop production:

1. 25% or more of private land could be tilled, due to the presence of remaining favorable topography and soils.
2. 5 to 25% of private land could be tilled due to the presence of remaining-favorable topography and soils.
3. Less than 5% of private land could be tilled due to the presence of unfavorable topography and soils.

**Preliminary Conservation Significance Rating:** This rating represents an overall rating of each polygon, in regard to its level of intactness and quality of natural communities. This rating system is not designed to indicate areas of conservation action, rather, it provides a single measure that allows quality comparisons between polygons. Rating system:

1. High conservation significance
2. Medium conservation significance
3. Low conservation significance

**Survey Intensity Comments:** Identifies the completeness of the survey and the degree of geographic coverage in the polygon.

**Outstanding Sites:** Identify sites that were clearly exemplary in quality of natural communities. This information may be informative in the future as identified starting points of more intensive inventories in the future.

**APPENDIX B: RAPID ECOLOGICAL ASSESSMENT POLYGON SUMMARIES**

**REA Summary Form**

**Polygon Number:** 3/20 (MT)

**Polygon Description:**

Polygons 3 and 20 were sampled as a single polygon due to similar natural community composition and continuity of natural vegetation between the polygons. Topography in the western two-thirds of the polygons is mostly level to gently rolling, whereas the eastern third is characterized by gently undulating hills and small closed basins. Soils in the western portion are shallow glacial till over sedimentary shales. *Pascopyrum smithii-Stipa comata* is the predominant upland community. In many areas this community is interspersed by small patches of *Poa secunda* and *Opuntia polycantha* occurring on exposed shale. *Populus deltoides* is widely scattered along short stretches of permanent streams.

The eastern third of the polygons encompass areas of prairie potholes on deeper glacial till. Uplands are dominated by *Elymus lanceolatus-Stipa comata*, whereas wetlands are dominated by *Pascopyrum smithii* and *Eleocharis palustris* associations. This portion of the polygons supported higher species diversity and was more productive than the remainder of the polygons.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii-Stipa comata	M		
(Elymus lanceolatus-Stipa comata)	M		
Artemesia cana/Pascopyrum smithii	SP		
Eleocharis palustris herbaceous veg.	SP		
Pascopyrum smithii	SP		
Populus deltoides/Symphoricarpos occidentalis	SP		
Stipa comata-Bouteloua gracilis-Carex filifolia	M	Agcr	2
Symphoricarpos occidentalis	SP		
Prunus virginiana	SP		
Sheperdia argentia	SP		

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii-Stipa comata*  
**Secondary:** (*Elymus lanceolatus-Stipa comata*)

**Ownership Classification:**

**Exotic Comments:** *Agropyron cristatum* is abundant in western areas of polygons on BLM Bankhead Jones lands. Stands in these areas are a mixture of *Agropyron cristatum* and native species. Historically, many of these sites may have been *Pascopyrum smithii-Stipa comata*.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 1

**Preliminary Conservation Significance Rating:** 2

**Survey Intensity Comments:** Standard sampling with good geographic coverage in the western portion of the polygons. Limited sampling on the eastern third due to poor access.

**REA Summary Form**

**Polygon Number:** 3B (MT)

**Polygon Description:** Rolling grassland on veneer of glacial till and on outcrops of escarpments and valleys, flanking nunatiks, with discrete areas of closed-basin prairie pothole complexes. The range of hydrological conditions and development of arid-to-hydric grassland types is notable. The central high plains and watercourses radiating out in all directions are mesic compared to the lower arid periphery on shale bedrock. *Pascopyrum smithii*-*Koeleria macrantha* is the prevailing uplands vegetation (possibly meshing with the wheatgrass type below; confirmation of it was impeded by drought conditions which seemed to have affected all grasses except *Koeleria*). The matrix is interrupted by many other large and small patch types associated with substrate, aspect, and basin or watercourse features.

This polygon is significant in its community diversity, representation of mesic types, and unbroken continuity with montane habitat. A significant area, less than 25%, is fragmented by oil fields.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Pascopyrum smithii</i> - <i>Koeleria macrantha</i>	M - center		
<i>Stipa comata</i> - <i>Bouteloua gracilis</i>	M- periphery		
<i>Artemisia cana</i> / <i>Pascopyrum smithii</i>	LP		
<i>Elymus lanceolatus</i> - <i>Poa juncifolia</i>	LP		
<i>Elymus lanceolatus</i> or <i>Pascopyrum smithii</i>	LP or matrix		
<i>Festuca scabrella</i>	LP in plains, matrix in Sweetgrass Hills		
<i>Pseudoregneria spicata</i> - <i>Koeleria macrantha</i>	LP		
<i>Pseudotsuga menziesii</i> / <i>Festuca scabrella</i>	LP in Sweetgrass Hills		
<i>Sarcobatus vermiculatus</i> / <i>Elymus lanceolatus</i>	LP		
( <i>Stipa comata</i> - <i>Koeleria macrantha</i> )	LP		
<i>Stipa curtisetata</i>	LP		
<i>Artemisia longifolia</i>	SP		
<i>Atriplex gardneri</i>	SP		
<i>Atriplex suckleyi</i>	SP		
<i>Carex aquatilis</i>	SP		
<i>Carex atherodes</i>	SP		
<i>Carex lanuginosa</i>	SP		
<i>Distichlis stricta</i>	SP		
<i>Eleocharis palustris</i>	SP		
<i>Festuca idahoensis</i>	SP and LP		
<i>Juncus balticus</i>	SP		
<i>Pascopyrum smithii</i> - <i>Nasella viridula</i>	SP		
<i>Poa pratensis</i> c.t. ( <i>Pascopyrum smithii</i> h.t.)	SP		
<i>Puccinellia nuttallii</i>	SP		

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Koeleria macrantha*  
**Secondary:** *Stipa comata*-*Bouteloua gracilis*

**Ownership Classification:** 4

**Exotic Comments:** The area is notably free of exotics. Spotted knapweed is in early stages of spreading along roads.

**Land-use Disturbance Rating:** 2

**Land-use Disturbance Comments:** The polygon encompasses six oilfields, concentrated in the north and northeast segments. The landscape is otherwise notably intact and uninterrupted by cropland or other developments in the core at present.

**Cropland Conversion Rating:** 1

**Preliminary Conservation Significance Rating:** 1

**Survey Intensity Comments:** Inventory focused on public lands and easements, and secondarily on private non-posted lands, with direct road access, spanning all sectors of grassland except in the extreme northwest. This survey did not cover the community type of the Sweetgrass Hills which are montane inclusions within the polygon; they are discussed in other reports.

**Outstanding Sites:** Priority targets include the best wetland complexes and intact freshwater springs. Some of the WPAs surveyed may be part of outstanding wetland complexes, but systematic inventory is needed across the landscape.

Note: The Sweetgrass Hills are priority sites within the polygon which were not addressed in this survey, and the continuity between plains and montane habitat has significance.

## REA Summary Form

**Polygon Number: 8 (MT)**

**Polygon Description:**

This polygon represents an area transitional between aspen parkland and *Agropyron-Stipa*-dominated prairies. The area is mantled with glacial drift, mostly unstratified outwash materials deposited over a gently undulating topography. A number of major drainages, ranging from deeply incised to gently meandering, traverse the area, creating an abundance of riparian and wetland conditions. The riparian communities are dominated by *Populus trichocarpa*, *P. tremuloides*, various *Salix* spp, especially *S. boothii* and *S. geyeri* and various wetland graminoids e.g. *Carex rostrata*, *C. nebrascensis* and *C. lanuginosus* and *Deschampsia cespitosa*. Though forested communities are well represented (both conifer and scattered north slope and swale aspen-dominated), the primary aspect is of mesic grasslands and shrub steppe dominated by *Festuca scabrella*, *F. idahoensis*, and *Potentilla fruticosa* (*Pentaphylloides floribunda*).

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Festuca scabrella</i> - <i>Festuca idahoensis</i>	M		
<i>Festuca idahoensis</i> - <i>Pseudoroegneria spicata</i>	SP-M		
<i>Festuca idahoensis</i> - <i>Danthonia intermedia</i>	M		
<i>Stipa comata</i> - <i>Bouteloua gracilis</i>	LP		
<i>Stipa comata</i> - <i>Carex filifolia</i>	LP		
<i>Pascopyrum smithii</i> alluvial flat	SP		
<i>Pascopyrum smithii</i> - <i>Stipa comata</i>	LP-M		
<i>Pascopyrum smithii</i> - <i>Bouteloua gracilis</i>	LP		
<i>Leymus cinereus</i> - <i>P. smithii</i>	SP		
<i>Koeleria macrantha</i> / <i>Phlox hoodii</i>	SP		
<i>Pentaphylloides floribunda</i> / <i>Festuca scabrella</i>	LP		
<i>Pentaphylloides floribunda</i> / <i>Deschampsia cespitosa</i>	SP		
<i>Deschampsia cespitosa</i>	SP		
<i>Juncus balticus</i>	SP		
<i>Juncus balticus</i> - <i>Carex pragracilis</i>	SP		
<i>Carex rostrata</i>	SP		
<i>Poa pratensis</i>	SP		
<i>Pascopyrum smithii</i> - <i>Poa juncifolia</i>	SP		
<i>Pascopyrum smithii</i> - <i>Carex filifolia</i>	M		
<i>Pascopyrum smithii</i> - <i>Nasella viridula</i>	LP		
<i>Puccinellia nuttalliana</i> - <i>Poa juncifolia</i>	P		
<i>Carex stenophylla</i> - <i>Muhlenbergia cuspidata</i>	LP		
<i>Populus trichocarpa</i> / <i>Cornus sericea</i>	SP		
<i>P. trichocarpa</i> / <i>Symphoricarpos occidentalis</i>	LP		
<i>P. trichocarpa</i> /Herbaceous	SP		
<i>Populus tremuloides</i> / <i>Osmorhiza occidentalis</i>	LP	Arma,, Urdi, Ciar	
<i>P. tremuloides</i> / <i>Cornus sericea</i>	SP		
<i>P. tremuloides</i> / <i>Calamagrostis canadensis</i>	SP		
<i>P. tremuloides</i> / <i>Symphoricarpos albus</i>	LP	Phpr, Popr	2-3
<i>P. tremuloides</i> / <i>Calamagrostis rubescens</i>	LP		
<i>Pseudotsuga menziesii</i> / <i>Symphoricarpos albus</i>	LP		
<i>Pinus flexilis</i> / <i>Festuca idahoensis</i>	SP		
<i>Abies lasiocarpa</i> / <i>Symphoricarpos albus</i>	SP		
<i>Picea</i> / <i>Cornus sericea</i>	SP		
<i>Picea</i> / <i>Calamagrostis canadensis</i>	SP		

Natural Community (cont.)

Symphoricarpos occidentalis	LP
Symphoricarpos occidentalis/Poa pratensis	
Symphoricarpos occidentalis/Juncus balticus	
Salix boothii/Calamagrostis canadensis	LP
Salix geyeriana/Calamagrostis canadensis	SP-LP
S. geyeriana/Deschampsia cespitosa-Juncus balticus	SP
Sarcobatus vermiculatus-Atriplex gardneri	SP
Atriplex gardneri	SP
Carex aquatilis	SP
Carex nebrascensis	SP
Carex sartwellii	SP
Distichlis stricta	LP
Hordeum jubatum	LP
Eleocharis pauciflora	SP
Eleocharis palustris	SP
Scirpus acutus	SP
Scirpus pungens	SP
Rosa woodsii	SP

**Polygon Natural Community Classification:**

**Primary:** Festuca scabrella-Festuca idahoensis

**Secondary:** Pentaphylloides floribunda/Festuca scabrella  
Festuca idahoensis-Agropyron spicatum

**Ownership Classification: 4**

**Exotic Comments:** This area has several exotics with substantial populations, namely *Phleum pratense* both planted in moist meadows and escaped to aspen parkland, *Bromus inermis* planted and escaped and the ubiquitous *Poa pratensis*. Four weedy species were noted: small populations of *Centaurea maculosa* on roadsides; *Euphorbia esula* very scattered in moist prairie; *Cirsium arvense* (and *Urtica dioica* in forested or riparian environments) where livestock impacts have been intensive; *Onopordum acanthium* and *Carduus nutans* in scattered former livestock pens.

**Land-use Disturbance Rating: 2**

**Land-use Disturbance Comments:** Winter wheat production, planting of moist to wet meadows to *Phleum pratense* and *Bromus inermis* (with flood irrigation in places) and uncontrolled roading are the most obvious disturbances at this time; at least 90% of the landscape is conspicuously intact, though grazing impacts in terms of weed spread could be significant.

**Cropland Conversion Rating: 1**

**Preliminary Conservation Significance Rating: 1**

**Survey Intensity Comments:** Surveys focused on Blackfoot Indian Reservation lands (which may be held by private individuals) and spanned the full range of biophysical environments with upland grasslands and shrub steppe receiving more intensive sampling. Much of the privately held land was inventoried except when cattle were present.

**Outstanding Sites:** Upland grasslands in several locations are in good to excellent condition, supporting a mosaic of *Festuca scabrella*- and *Pentaphylloides floribunda*-dominated vegetation types and groves of aspen (especially the G3 comm. type *Populus tremuloides* / *Osmorhiza occidentalis*), outliers of the more extensive parkland to the west. Some of these aforementioned sites grade to wetland complexes that appeared, from a distance to be in good shape. Several riparian stringers running out onto the plains and dominated by *Populus trichocarpa* in the overstory, appeared cut-off from cattle exploitation and could be in good condition.

**REA Summary Form**

**Polygon Number:** 9 (MT)

**Polygon Description:**

Polygon 9 is a mosaic of soils and landforms. The western third of the polygon is characterized by gently rolling to moderately dissected topography. Uplands are dominated by *Stipa comata-Bouteloua gracilis-Carex filifolia* and *Elymus lanceolatus-Stipa comata* associations. Well developed woodland natural communities occur along riparian areas and as hardwood draws in uplands. Benches above streams are generally dominated by *Artemesia cana/Pascopyrum smithii*.

The Bitter Creek badlands comprise the interior portion of the polygon and are characterized by rolling to deeply dissected sedimentary shales. *Juniperus horizontalis* communities dominate the dissected portions, forming dune-like topography along the eastern rim of the badlands. Eroding slopes with limited vegetative cover are also common throughout the badlands. Benches and gently rolling uplands are characterized by *Pascopyrum smithii* associations, which occur with *Stipa comata* on better soils. This community also has several areas in which claypan soils form small patches dominated by *Poa secunda*. These areas were tentatively identified as *Elymus lanceolatus-Bouteloua gracilis-Poa secunda*.

The eastern third of the polygon is characterized by gently rolling topography and productive soils derived from glacial till. *Pascopyrum smithii-Stipa comata* is the dominant upland community. *Pascopyrum smithii-Nasella viridula* occurs in ravines and other mesic sites. These communities have been extensively converted for cropland production outside of the polygon.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
( <i>Elymus lanceolatus-Stipa comata</i> )	M		
<i>Stipa comata-Bouteloua gracilis-Carex filifolia</i>	M		
<i>Artemesia cana/Pascopyrum smithii</i>	LP		
( <i>Elymus lanceolatus-Bouteloua gracilis-Poa secunda</i> )	LP		
<i>Juniperus horizontalis/Schizachyrium scoparium</i>	LP	Eues	1
<i>Pascopyrum smithii-Stipa comata</i>	M		
<i>Pascopyrum smithii-Nasella viridula</i>	SP		
Eroding Great Plains Badlands Sparse Vegetation	LP		
<i>Rhus trilobata/Schizachyrium scoparium</i>	SP		
<i>Juniperus horizontalis/Carex inops ssp. heliophila</i>	SP	Eues	1
( <i>Juniperus horizontalis/Calamovilfa longifolia</i> )	SP	Eues	1
<i>Populus deltoides/Fraxinus pennsylvanica</i>	SP		
( <i>Acer negundo/Symphoricarpos occidentalis/Pascopyrum smithii</i> )	SP	Eues	2
<i>Muhlenbergia cuspidata-Bouteloua gracilis</i>	SP		
<i>Sheperdia argentia</i>	SP	Eues	2

**Polygon Natural Community Classification:**

**Primary:** (*Elymus lanceolatus-Stipa comata*)  
**Secondary:** *Stipa comata-Bouteloua gracilis-Carex filifolia*

**Ownership Classification:** 2

**Exotic Comments:** *Euphorbia esula* relatively abundant in band of shale soils along the eastern rim of the Bitter Creek badlands and in a riparian area on the western portion of the badlands.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 1

**Preliminary Conservation Significance Rating:** 1

**Survey Intensity Comments:** This polygon was extensively covered using REA sampling methodology.

**Outstanding Sites:** High quality shallow glacial till over sedimentary soils in the general area of T36 R36 Sec. 23. High quality glacial till mixed-grass prairie in the vicinity of T32 R40 Sec. 30.

**REA Summary Form**

**Polygon Number:** 12 (MT)

**Polygon Description:**

Predominantly level to gently rolling topography on glacial till derived soils. Uplands are dominated by *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* and *Pascopyrum smithii*-*Stipa comata* associations. The *Pascopyrum smithii*-*Stipa comata* association forms a mosaic with wetland communities in portions of the polygon. *Eleocharis palustris* and *Hordeum jubatum* *Pascopyrum smithii* are the most common wetland types and are relatively shallow with limited water retention. *Schizachyrium scoparium*-*Muhlenbergia cuspidata* and *Juniperus horizontalis*/*Schizachyrium scoparium* associations occur on small sidehills created by downcutting of ephemeral streams.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Stipa comata</i> - <i>Bouteloua gracilis</i> - <i>Carex filifolia</i>	M		
<i>Pascopyrum smithii</i> - <i>Stipa comata</i>	M		
<i>Eleocharis palustris</i>	SP		
<i>Pascopyrum smithii</i> - <i>Hordeum jubatum</i>	SP		
<i>Schizachyrium scoparium</i> - <i>Muhlenbergia cuspidata</i>	SP		
<i>Pascopyrum smithii</i>	SP		
<i>Symphoricarpos occidentalis</i>	SP		
<i>Juniperus horizontalis</i> / <i>Schizachyrium scoparium</i>	SP		
<i>Distichilis spicata</i> var. <i>stricta</i>	SP		
<i>Scirpus acutus</i>	SP		

**Polygon Natural Community Classification:**

**Primary:** *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia*  
**Secondary:** *Pascopyrum smithii*-*Stipa comata*

**Ownership Classification:** 3

**Exotic Comments:** No exotics of importance noted

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** Limited gas exploration and development, which has a strong potential to increase.

**Cropland Conversion Rating:** 1

**Preliminary Conservation Significance Rating:** 2

**Survey Intensity Comments:** This polygon was extensively covered using REA sampling methodology.

**Outstanding Sites:** Grassland communities in the vicinity of Whitewater Lake.

## REA Summary Form

**Polygon Number:** 17 (MT)

**Polygon Description:**

Polygon 17 is characterized by gently undulating hills with shallow closed basins. *Elymus lanceolatus-Stipa comata* is the dominant natural community in the uplands. North facing slopes and drainages support mesic species and communities, including *Pascopyrum smithii-Nasella viridula* in overflow drainages and *Stipa curtisetata-Elymus lanceolatus* on steep north facing slopes of hills. Gravelly slopes along a small drainage supported a previously undescribed natural community type, tentatively identified as *Muhlenbergia cuspidata-Stipa comata*. Wetlands generally retain water for short periods of time and are dominated by communities of *Hordeum jubatum* (shallow wetlands) and *Eleocharis palustris* herbaceous vegetation (deeper basins).

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
( <i>Elymus lanceolatus-Stipa comata</i> )	M		
<i>Hordeum jubatum</i> herbaceous vegetation	SP		
<i>Eleocharis palustris</i> herbaceous veg.	SP		
<i>Pascopyrum smithii-Nasella viridula</i>	LP		
<i>Stipa curtisetata-Elymus lanceolatus</i> herb.	SP		
( <i>Muhlenbergia cuspidata-Stipa comata</i> )	SP		

**Polygon Natural Community Classification:**

**Primary:** *Elymus lanceolatus-Stipa comata*

**Secondary:**

**Ownership Classification:** 3

**Exotics Comments:** Area noted to be mostly exotic free.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 1

**Preliminary Conservation Significance Rating:** 2

**Survey Intensity Comments:** Completed good geographic coverage of the polygon using standard sampling technique.

**Outstanding Sites:** T37N R25E S10 - this area supports good examples of natural communities common within the polygon.

**REA Summary Form**

**Polygon Number:** 21 (MT)

**Polygon Description:**

Polygon 21 is primarily characterized by deeply dissected marine shales with limited areas of level to gently rolling glacial till. Dissected portions of the polygon have numerous ephemeral streams; adjoining terraces are dominated by *Artemesia cana/Pascopyrum smithii*. Gentle slopes and uplands support *Pascopyrum smithii-Stipa comata*, whereas, steeper slopes with less developed soils are generally dominated by *Juniperus horizontalis/Schizachyrium scoparium* on cool aspects or stands of *Schizachyrium scoparium* on warm sites. Eroding badland slopes with minimal vegetative cover are common. Level to gently rolling grasslands in the southern portion of the polygon are dominated by *Pascopyrum smithii-Stipa comata*. Limited areas of wetland development also exist.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Juniperus horizontalis/Schizachyrium scoparium	LP		
Artemesia cana/Pascopyrum smithii	LP		
Juniperus horizontalis/Carex inops ssp. heliophila	SP		
Pascopyrum smithii-Stipa comata	M		
(Elymus lanceolatus-Stipa comata)	M		
Eroding Great Plains Badlands Sparse Vegetation	LP		
Eleocharis palustris	SP		
Pascopyrum smithii	SP		
Pascopyrum smithii-Nasella viridula	SP		
Stipa comata-Muhlenbergia cuspidata	SP		
Typha latifolia	SP		

**Polygon Natural Community Classification:**

**Primary:** Juniperus horizontalis/Schizachyrium scoparium

**Secondary:** Artemesia cana/Pascopyrum smithii

**Ownership Classification:** 1

**Exotic Comments:** No exotics of significance noted.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 3 (southern portion 2)

**Preliminary Conservation Significance Rating:** 2

**Survey Intensity Comments:** Limited sampling was completed and distribution of sample locations was restricted to the interior of polygon.

**REA Summary Form**

**Polygon Number:** 23 (MT)

**Polygon Description:**

This polygon is dominated by extensive glaciated benches above the Milk River and smaller streams. Upland benches are dominated by *Elymus lanceolatus-Stipa comata* and *Stipa comata-Bouteloua gracilis-Carex filifolia*. Abundance of *Elymus* appears to be reduced or absent in areas with increased soil coarseness. Wetland development is limited. The Milk River meanders through a wide, mostly level valley. Hardwood riparian communities along the Milk are dominated by *Populus deltoides* with limited understory canopy development. Hardwood communities are poorly developed along other streams. Benches adjoining the Milk are mostly level and have been extensively converted for crop or hay production. *Artemisia cana/Pascopyrum smithii* is the dominant natural community along streams. Several communities were noted along the valley walls of the Milk. Coarse soils, which were the most prevalent, supported *Schizachyrium scoparium-Muhlenbergia cuspidata* and *Juniperus horizontalis/Schizachyrium scoparium* associations.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
( <i>Elymus lanceolatus-Stipa comata</i> )	M		
<i>Stipa comata-Bouteloua gracilis-Carex filifolia</i>	M		
<i>Artemisia cana/Pascopyrum smithii</i>	LP		
<i>Pascopyrum smithii-Stipa comata</i>	M		
<i>Eleocharis palustris</i>	SP		
<i>Artemisia tridentata/Pascopyrum smithii</i>	SP		
<i>Populus deltoides/Artemisia cana</i>	LP		
<i>Schizachyrium scoparium-Muhlenbergia cuspidata</i>	LP		
<i>Populus deltoides/Symphoricarpos occidentalis</i>	LP		
<i>Sarcobatus vermiculatus/Pascopyrum smithii</i>	SP		
<i>Juniperus horizontalis/Schizachyrium scoparium</i>	SP		
<i>Pascopyrum smithii-Nasella viridula</i>	SP		
<i>Symphoricarpos occidentalis</i>	SP		
( <i>Acer negundo/Symphoricarpos occidentalis</i> )	SP	Brin, Popr, Eues	3

**Polygon Natural Community Classification:**

- Primary:** *Elymus lanceolatus-Stipa comata*
- Secondary:** *Stipa comata-Bouteloua gracilis-Carex filifolia*

**Ownership Classification:** 2

**Exotic Comments:** Few exotics were noted. Leafy spurge limited to a small portion of Whitewater Creek. Upland grasslands have very few exotics despite gas exploration and development.

**Land-use Disturbance Rating:** 2

**Land-use Disturbance Comments:** Extensive natural gas development across much of the polygon. Disturbance is associated with this development, i.e. increased roading; however, surface disturbance is limited and pipelines are covered by native vegetation. Roads are generally 2 tracks.

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 1

**Survey Intensity Comments:** This polygon was extensively covered using standard sampling methodology.  
**Outstanding Sites:** In general the benches above the Milk River supported high quality natural communities.

## REA Summary Form

**Polygon Number:** 25 (MT)

**Polygon Description:**

The south boundary of polygon 25 borders the Milk River valley which rises less than a hundred feet before giving way to rolling uplands. Several communities associated with coarse textured soils occur along the valley wall, including *Calamovilfa longifolia-Schizachyrium scoparium*, *Juniperus horizontalis/Schizachyrium scoparium*, and *Calamovilfa longifolia-Carex filifolia*. Uplands are dominated by *Elymus lanceolatus-Stipa comata*. *Artemisia cana* commonly occurs within this community with a cover of 5 to 10 percent. Several small streams cut through the uplands. *Artemisia cana/Pascopyrum smithii* is the dominant community along stream terraces. Limited woodland riparian vegetation occurs in areas of higher moisture.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
( <i>Elymus lanceolatus-Stipa comata</i> )	M		
<i>Artemisia cana/Pascopyrum smithii</i>	LP		
<i>Calamovilfa longifolia-Schizachyrium scoparium</i>	SP		
<i>Juniperus horizontalis/Schizachyrium scoparium</i>	SP		
<i>Calamovilfa longifolia-Carex inops ssp. filifolia</i>	SP		
<i>Stipa comata-Bouteloua gracilis-Carex filifolia</i>	M		
<i>Schizachyrium scoparium-Muhlenbergia cuspidata</i>	SP		
<i>Pascopyrum smithii</i>	SP		
<i>Populus deltoides/Symphoricarpos occidentalis</i>	LP		
( <i>Acer negundo/Symphoricarpos occidentalis/Pascopyrum smithii</i> )	SP		
<i>Shepherdia argentea</i>	SP		
Eroding Great Plains Badlands Sparse vegetation	LP		
<i>Pascopyrum smithii -Hordeum jubatum</i>	SP		

**Polygon Natural Community Classification:**

**Primary:** *Elymus lanceolatus-Stipa comata*

**Secondary:** *Calamovilfa longifolia-Schizachyrium scoparium*

**Ownership Classification:** 3

**Exotic Comments:** *Euphorbia esula* was noted along an intermittent stream. No other exotics of importance noted.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 3

**Survey Intensity Comments:** This polygon was extensively covered using REA sampling methodology.

**Outstanding Sites:** None

## REA Summary Form

**Polygon Number:** 26 (MT)

**Polygon Description:**

The predominant landscape feature of this polygon is the Bear's Paw Mountains, a Tertiary volcanic uplift with scattered high (5,600 - 6,900 ft) and numerous lower mountains. On the edge of this uplift are Cretaceous sandstones. Both of these parent materials appear to form sandy soils.

*Artemisia cana/Pascopyrum smithii* association dominates on stream terraces, while *Pascopyrum smithii-Stipa comata* and *Stipa comata-Bouteloua gracilis-Carex filifolia* associations occur on mesa tops and lower slopes. Steeper slopes support *Pseudoroegneria spicata/Stipa comata* and *Schizachyrium scoparium-Muhlenbergia cuspidata*. Many upper slopes and ridge tops support *Pinus ponderosa/Pseudoroegneria spicata*. Mesic shrub dominated communities, such as *Symphoricarpos occidentalis* and *Crataegus succulenta* associations, as well as, aspen groves, *Populus tremuloides/Prunus virginiana* are common in mesic upland sites in the northwestern portion of the polygon. *Salix amygdaloides* and *Populus tremuloides* are the most common riparian associations.

Plant associations that would support dominance by *Festuca scabrella* are common in the northwest portion of the polygon. In most of these areas *Festuca scabrella* has been partially replaced by *Poa pratensis*. *Stipa curtisetata* is also common in these associations. Extensive stands of *Artemisia tridentata vaseyana* occurred on warm slopes at relatively high elevations on the Milk River-Missouri River divide.

Forest plant associations in the high portion of the Bear's Paw Mountains are described by Roberts (1980, Forest Habitat Types of the Bear's Paw Mountains and Little Rocky Mountains, Montana. M.S. Thesis, University of Montana, Missoula).

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii-Stipa comata	M	Brin	1
Pinus ponderosa/Pseudoroegneria spicata	LP	Brja	1
Artemisia cana/Pascopyrum smithii	LP		
Schizachyrium scoparium/Muhlenbergia cuspidata	SP		
Pseudoroegneria spicata-Stipa comata	LP	Brja	2
Stipa comata-Bouteloua gracilis-Carex filifolia	M	Brja	2
Schizachyrium scoparium-Carex filifolia	SP		
Symphoricarpos occidentalis	SP		
Artemisia tridentata/Pascopyrum smithii	M		
Festuca scabrella-Pseudoroegneria spicata	LP	Popr	2
Potentilla fruticosa/Festuca scabrella	SP	Popr	2
Festuca scabrella-Festuca idahoensis	SP	Popr	2
Crataegus succulenta	SP	Popr	2
Salix amygdaloides	SP		
Populus tremuloides/Prunus virginiana	SP	Popr	2
Artemisia cana/Carex heliophila	SP		
Prunus virginiana	SP		
Pascopyrum smithii-Nasella viridula	SP	Popr	1
Yucca glauca/Calamovilfa longifolia	SP		
Pinus ponderosa/Amelanchier alnifolia	SP		
Pseudotsuga menziesii/Symphoricarpos albus	LP		
Pseudotsuga menziesii/Spiraea betulifolia	SP		
Pseudotsuga menziesii/Viola canadensis	SP		

Natural Community (cont.)

(Pseudotsuga menziesii/Cornus canadensis)	SP		
Pseudoroegneria spicata-Pascopyrum smithii	LP		
(Festuca viridula-Nasella viridula)	SP	Popr	1
Artemesia tridentata vaseyana/Festuca scabrella	LP		
Scirpus acutus	SP		
Distichilis spicata	SP		
Deschampsia cespitosa	SP	Popr	2
Juncus balticus	SP		
Salix exigua	SP		
Populus trichocarpa/Symphoricarpos occidentalis	SP	Popr	
Populus tremuloides/Prunus virginiana	SP	Popr	
Acer negundo/Prunus virginiana	SP		
Scirpus pungens	SP		
Salix bebbiana	SP		
Betula occidentalis	SP		
Pascopyrum smithii	SP		
Salix lutea	SP		

**Polygon Natural Community Classification:**

**Primary:** Pascopyrum smithii-Stipa comata  
**Secondary:** Pinus ponderosa/Pseudoroegneria spicata

**Ownership Classification:** 4

**Exotic Comments:** *Poa pratensis* was common in mesic grasslands, shrublands and riparian areas, while *Bromus japonicus* was abundant in some of the drier associations. *Bromus inermis* had escaped roadside plantings in a few small areas. *Euphorbia esula* was observed in only one stand.

**Land-use Disturbance Rating:** 2

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 1

**Preliminary Conservation Significance Rating:** 1

**Survey Intensity Comments:** This polygon was extensively covered using REA sampling methodology.

**Outstanding Sites:** Bear's Paw Mountains warrant additional inventory.

REA Summary Form

Polygon Number: 31 (MT)

Polygon Description:

Polygon 31 is characterized by gently rolling uplands adjoining the Poplar River. Uplands are dominated by *Elymus lanceolatus-Stipa comata* association with *Pascopyrum smithii-Nasella viridula* in ravines and mesic depressions. Benches above the Poplar River are dominated by *Pascopyrum smithii* and *Distichilis spicata* associations. Areas of salt accumulation were evident where *Distichilis* was noted.

Polygon Natural Communities Summary:

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
( <i>Elymus lanceolatus-Stipa comata</i> )	M		
<i>Distichilis spicata</i>	LP		
<i>Pascopyrum smithii</i>	LP		
<i>Eleocharis palustris</i> herbaceous veg.	SP		
<i>Pascopyrum smithii-Nasella viridula</i>	SP		
<i>Prunus virginiana</i>	SP		

Polygon Natural Community Classification:

Primary: *Elymus lanceolatus-Stipa comata*  
Secondary: *Distichilis spicata*

Ownership Classification: 4

Exotic Comments: No significant exotic species were noted.

Land-use Disturbance Rating: 1

Land-use Disturbance Comments:

Cropland Conversion Rating: 2

Preliminary Conservation Significance Rating: 3

Survey Intensity Comments: Due to the small size, extensive fragmentation, and limited access, sampling effort was below standard sampling procedures.

Outstanding Sites: None noted.

## REA Summary Form

**Polygon Number:** 32 (MT)

**Polygon Description:**

Primarily glaciated plains developed on fine-textured soils derived from marine shales. Soil development is often minimal, and vegetation sparse. The dominant vegetation throughout much of the polygon is *Artemisia tridentata*/*Pascopyrum smithii*. *Bouteloua gracilis* and *Nasella viridula* are more common in more benign areas, while *Poa secunda* often dominates where wind or water have removed all topsoil. *Pascopyrum smithii*/*Nasella viridula* is dominant in areas that do not support sagebrush.

The Larb Hills run north-south through the center of Polygon 32. This uplift is capped by sandstone in some places giving rise to sandy soils. *Pascopyrum smithii*/*Stipa comata* is dominant in these areas. Slopes often support association with *Pseudoroegneria spicata*, *Muhlenbergia cuspidata* and *Schizachyrium scoparium*. The Missouri River breaks occur along the south edge of the polygon. Stream terraces are frequently dominated by *Sarcobatus vermiculatus* and *Artemisia cana*. Steep slopes are dominated by *Sarcobatus vermiculatus*, *Artemisia tridentata*/*Pseudoroegneria spicata*, or *Pinus ponderosa*. Large stands of *Pinus ponderosa*/*Juniperus horizontalis* occur along the Missouri River near Glasgow. Many of the junipers are intermediate between *J. horizontalis* and *J. scopulorum*. Riparian vegetation is not extensive in this polygon.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Artemisia tridentata</i> / <i>Pascopyrum smithii</i>	M		
<i>Pascopyrum smithii</i> - <i>Nasella viridula</i>	M		
<i>Pascopyrum smithii</i> - <i>Stipa comata</i>	M		
( <i>Artemisia tridentata</i> / <i>Muhlenbergia cuspidata</i> )	SP		
<i>Artemisia cana</i> / <i>Pascopyrum smithii</i>	LP		
<i>Schizachyrium scoparium</i> / <i>Muhlenbergia cuspidata</i>	SP		
<i>Pseudoroegneria spicata</i> / <i>Muhlenbergia cuspidata</i>	SP		
<i>Artemisia tridentata</i> / <i>Pseudoroegneria spicata</i>	LP		
<i>Sarcobatus vermiculatus</i> / <i>Pseudoroegneria spicata</i>	SP		
<i>Pascopyrum smithii</i>	SP		
<i>Stipa comata</i> - <i>Bouteloua gracilis</i> - <i>Carex filifolia</i>	M		
<i>Artemisia tridentata</i> / <i>Stipa comata</i>	LP		
<i>Pinus ponderosa</i> / <i>Pseudoroegneria spicata</i>	LP		
<i>Juniperus horizontalis</i> / <i>Schizachyrium scoparium</i>	SP		
<i>Sarcobatus vermiculatus</i> / <i>Pascopyrum smithii</i>	SP		
<i>Eleocharis palustris</i>	SP		
( <i>Iva axillaris</i> / <i>Rumex salicifolius</i> )	SP		
<i>Populus deltoides</i> / <i>Fraxinus pennsylvanica</i>	SP		
<i>Symphoricarpos occidentalis</i>	SP		
<i>Salix exigua</i>	SP		
<i>Fraxinus pennsylvanica</i> / <i>Prunus virginiana</i>	SP		
<i>Prunus virginiana</i>	SP		
<i>Distichlis spicata</i>	SP		
<i>Spartina pectinata</i>	SP		
<i>Typha latifolia</i>	SP		
<i>Populus deltoides</i> / <i>Symphoricarpos occidentalis</i>	SP		

Additional forest types described by Roberts et al. (1979)

*Pinus ponderosa*/*Juniperus scopulorum*

*Pseudotsuga menziesii*/*Juniperus scopulorum*

*Pseudotsuga menziesii*/*Oryzopsis micrantha*

**Polygon Natural Community Classification:**

**Primary:** *Artemisia tridentata*/*Pascopyrum smithii*

**Secondary:** *Pascopyrum smithii*-*Stipa comata*

**Ownership Classification: 2**

**Exotic Comments:** Exotics are not common in this polygon. *Melilotus officinalis* was noted in two stands and may be abundant, especially along the Missouri River breaks and forest during years of above normal precipitation.

**Land-use Disturbance Rating: 1**

**Land-use Disturbance Comments:** Bentonite claims exist in the southeast portion of the polygon.

**Cropland Conversion Rating: 2**

**Preliminary Conservation Significance Rating: 1**

**Survey Intensity Comments:** This polygon was extensively covered using REA sampling methodology.

## REA Summary Form

**Polygon Number:** 35 (MT)

**Polygon Description:**

Polygon 35 encompasses moderately dissected uplands and riparian area associated with the West Fork of Wolf Creek. Uplands are dominated by the *Elymus lanceolatus*-*Stipa comata* association. Ravines in uplands support hardwood associations, including *Sheperdia argentea*, *Prunus virginiana*, and *Acer negundo*/*Prunus virginiana*. Steep, eroded uplands with sandstone parent material supported communities dominated by *Calamovilfa longifolia*, *Juniperus horizontalis*, and *Rhus trilobata*. Benches above the creek support *Artemisia cana*/*Pascopyrum smithii*, whereas riparian development is confined to *Salix* shrublands.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
( <i>Elymus lanceolatus</i> - <i>Stipa comata</i> )	M		
<i>Artemisia cana</i> / <i>Pascopyrum smithii</i>	LP		
<i>Stipa Comata</i> - <i>Bouteloua gracilis</i> - <i>Carex filifolia</i>	SP		
<i>Symphoricarpos occidentalis</i>	SP		
<i>Sheperdia argentea</i>	SP		
<i>Prunus virginiana</i>	SP		
<i>Juniperus horizontalis</i> / <i>Schizachyrium scoparium</i>	SP		
<i>Calamovilfa longifolia</i> - <i>Carex inops</i> ssp. <i>heliophila</i>	SP		
<i>Salix exigua</i>	SP		
<i>Rhus trilobata</i> / <i>Calamovilfa longifolia</i>	SP		
<i>Calamovilfa longifolia</i> - <i>Schizachyrium scoparium</i>	SP		
<i>Acer negundo</i> / <i>Prunus virginiana</i>	SP		

**Polygon Natural Community Classification:**

**Primary:** *Elymus lanceolatus*-*Stipa comata*

**Secondary:** *Artemisia cana*/*Pascopyrum smithii*

**Ownership Classification:** 4

**Exotic Comments:** Few exotics noted, none of significance.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** Limited oil field development in the northern portion of the polygon. Abundant oil development activity adjoining the polygon may indicate additional deposits and development in the future.

**Cropland Conversion Rating:** 3

**Preliminary Conservation Significance Rating:** 3

**Survey Intensity Comments:** Surveyed using standard sampling techniques, however, limited access to the southern 2/3rds of the polygon limited geographic coverage.

**Outstanding Sites:** None noted.

## REA Summary Form

**Polygon Number:** 36 (north of Missouri River) (MT)

**Polygon Description:**

The predominant landscape features of the northern portion of Polygon 36 are the Little Rocky Mountains to the north and the Missouri River breaks to the south. The Little Rockies are an igneous pluton intruded into Madison Limestone and adjacent sandstones. Soils around the uplift are probably derived from limestone and are somewhat sandy in texture. The Missouri River breaks are an area of concentrated dissection in Cretaceous shales and sandstone, and soils are predominantly clayey with local areas of sandy texture. At least one portion of Bear Paw shale along the Missouri River weathers to small chips that appear to have many characteristics of sand.

Grasslands on the flanks of the Little Rocky Mountains are *Pascopyrum smithii*-*Stipa comata* and *Schizachyrium scoparium*-*Carex filifolia* on the slopes. South and north of the mountains *Artemisia tridentata*-*Pascopyrum smithii* and *Pascopyrum smithii*-*Bouteloua gracilis* dominate the plains. In the breaks, *Artemisia tridentata*/*Pseudoroegneria spicata* is common on mesa tops while pine forests occur on the slopes. *Pinus ponderosa*/*Pseudoroegneria spicata* is common in the upper portion of the breaks, while *Pinus ponderosa*/*Juniperus horizontalis* occupies the lower horizons closer to the river. This type appears to have two phases in the area, higher understories are dominated by a scattered cover of *Pseudoroegneria spicata*, whereas near the river these forests support a carpet of *Carex heliophila*.

Along the Missouri River riparian areas support stands of *Populus deltoides*/recent alluvial bar and *Populus deltoides*/*Symphoricarpos occidentalis*. Older terraces have *Sarcobatus vermiculatus*/*Pascopyrum smithii* or *Artemisia cana*/*Pascopyrum smithii*. Badlands slopes are dominated by sparse stands of *Sarcobatus vermiculatus*/*Pseudoroegneria spicata*. In the western portion of the polygon and along portions of the river, slopes supported stands dominated by *Artemisia tridentata*/*Muhlenbergia cuspidata*.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Artemisia tridentata/Pascopyrum smithii	M	Brja	2
(Pascopyrum smithii-Bouteloua gracilis)	M	Brja	2
Artemisia cana/Pascopyrum smithii	LP	Brja	2
(Artemisia tridentata/Muhlenbergia cuspidata)	LP		
Pinus ponderosa/Juniperus horizontalis	LP		
Pascopyrum smithii-Stipa comata	M	Brja	2
Pinus ponderosa/ Pseudoroegneria spicata	LP	Meof	2
Sarcobatus vermiculatus/Pseudoroegneria spicata	LP		
Pseudoroegneria spicata-Stipa comata	SP		
Prunus virginiana	SP		
Schizachyrium scoparium-Carex filifolia	SP	Popr	1
Populus deltoides/Symphoricarpos occidentalis	LP		
(Populus deltoides/Salix spp.)	LP		
Salix exigua	SP		
Pseudotsuga menziesii/Juniperus scopulorum	SP		
Festuca scabrella- Pascopyrum smithii	SP	Popr	2
Juniperus horizontalis/Schizachyrium scoparium	SP		
Potentilla fruticosa/Festuca scabrella	SP	Popr	2
Schizachyrium scoparium-Pseudoroegneria spicata	SP		
Pseudoroegneria spicata/Muhlenbergia cuspidata	SP		
Symphoricarpos occidentalis	SP		
Rhus trilobata/ Pseudoroegneria spicata	SP		

Natural Community (cont.)

Pseudotsuga menziesii/Oryzopsis micrantha	SP
Salix amygdaloides	SP
Scirpus pungens	SP
Scirpus acutus	SP
Pascopyrum smithii	SP
Typha latifolia	SP
Distichilis spicata	SP

Additional associations reported by Roberts (1980) for the little Rocky Mountains

Pinus ponderosa/Juniperus scopulorum  
Pinus ponderosa/Symphoricarpos occidentalis  
Pinus ponderosa/Arctostaphylos uva-ursi  
Pinus ponderosa/Berberis repens  
Pinus contorta/Juniperus communis  
Pinus contorta/Linnaea borealis  
Pseudotsuga menziesii/ Symphoricarpos occidentalis  
Pseudotsuga menziesii/ Arctostaphylos uva-ursi  
Pseudotsuga menziesii/ Berberis repens  
Pseudotsuga menziesii/ Linnaea borealis

**Polygon Natural Community Classification:**

**Primary:** Artemisia tridentata/Pascopyrum smithii  
**Secondary:** Pascopyrum smithii-Bouteloua gracilis

**Ownership Classification: 2**

**Exotic Comments:** *Bromus japonicus* was common in many of the grassland types occurring on nearly level terrain throughout the polygon. *Poa pratensis* was common in a few stands near the mountains. *Melilotus officinalis* occurred in the southern portion of the area.

**Land-use Disturbance Rating: 1**

**Land-use Disturbance Comments:** Disturbance is primarily associated with open pit gold mining in the Little Rocky Mountains. This mining activity significantly impacts the natural communities of the mountain range.

**Cropland Conversion Rating: 1**

**Preliminary Conservation Significance Rating: 1**

**Survey Intensity Comments:** This polygon was extensively covered using REA sampling methodology.

**Outstanding Sites:**

## REA Summary Form

**Polygon Number:** 38 (MT)

**Polygon Description:**

A gently rolling landscape that is mostly east of the predominance of *Festuca scabrella*. The upper benchlands are partially mantled with outwash materials but mostly the soils are developed from in-place weathering. The northernmost portion of the polygon has appreciable vertical relief, rising to several prominent sandstone buttes (with limestone or calcareous inclusions). The southern end is mostly tablelands with moderately incised draws, which slope gently and constitute no unusual habitat. This polygon could easily be extended to the west to incorporate *F. scabrella*-dominated grasslands and *Pentaphylloides floribunda*-dominated shrub-steppe.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii-Bouteloua gracilis	M	Brin, Brja	2,2
Stipa comata-Bouteloua gracilis/Carex filifolia	M-LP		
Pascopyrum smithii-Pseudoroegneria spicata	M		
Pascopyrum smithii-Nasella viridula	LP	Brin, Brja	2,2
Pascopyrum smithii-Stipa comata	M-LP	Brin, Brja	2,2
Pseudoroegneria spicata-Carex filifolia	M		
Pseudoroegneria spicata-Bouteloua gracilis	SP		
Festuca idahoensis-Pseudoroegneria spicata	SP		
Eleocharis palustris	SP		
Suaeda calceoliformis-Salicornia rubra	SP		
Juncus balticus	SP	Ciar	1
Juncus balticus-Carex praegracilis	SP	Ciar	2
Festuca idahoensis-Pseudoroegneria spicata	SP		
Elymus lanceolatus-Stipa comata	SP		
Rhus aromatica/Stipa comata	LP-M		
Artemisia cana/Pascopyrum smithii	SP	Brja	3
Calamagrostis canadensis	SP	Ciar	1
Bouteloua gracilis	SP		
Calamovilfa longifolia	SP		

**Polygon Natural Community Classification:**

**Primary:** Pascopyrum smithii-Bouteloua gracilis  
**Secondary:** Stipa comata - Bouteloua gracilis/Carex filifolia

**Ownership Classification:** 4

**Exotic Comments:** Exotics are a minor component with *Bromus inermis* ostensibly expanding beyond the areas into which it was seeded. *Phleum pratense* and *Poa pratensis* have increased along riparian reaches and established, along with *B. inermis*, in upland swales. Noxious weeds are a minor problem, mostly confined to overgrazed pastures, with the exception of *Bromus japonicus*, which has expanded onto moist sites of all descriptions

**Land-use Disturbance Rating:** 2

**Land-use Disturbance Comments:** The polygon was configured to exclude agricultural practices which it mostly does with the exception of winter wheat and alfalfa plantings.

**Cropland Conversion Rating: 2**

**Preliminary Conservation Significance Rating: 2**

**Survey Intensity Comments:** For the most part, inventory was restricted to Hwy. 89 with one sortie on gravel roads to the west. The survey did not follow the ravines to the east to discover hillslope or riparian community types.

**Outstanding Sites:** No outstanding sites were found in reconnaissance and none are known to exist in this polygon.

## REA Summary Form

**Polygon Number:** 39 (MT)

**Polygon Description:**

Rolling to moderately dissected grasslands along Wolf Creek and smaller drainages. Uplands are dominated by *Elymus lanceolatus*-*Stipa comata* association. Ravines in uplands support small patch communities associated with coarse soils, including *Schizachyrium scoparium*-*Carex inops* ssp. *heliophila* and *Calamovilfa longifolia*-*Carex inops* ssp. *heliophila*. Benches above the creek support *Artemisia cana*/*Pascopyrum smithii*. *Populus deltoides*-*Fraxinus pennsylvanica* association was noted near the confluence of Wolf Creek and Missouri River.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
( <i>Elymus lanceolatus</i> - <i>Stipa comata</i> )	M		
<i>Pascopyrum smithii</i> - <i>Nasella viridula</i>	SP	Popr	2
<i>Symphoricarpos occidentalis</i>	SP	Popr	2
<i>Artemisia cana</i> / <i>Pascopyrum smithii</i>	LP		
<i>Populus deltoides</i> - <i>Fraxinus pennsylvanica</i>	SP		
<i>Schizachyrium scoparium</i> - <i>Carex inops</i> ssp. <i>heliophila</i>	SP		
<i>Calamovilfa longifolia</i> - <i>Carex inops</i> ssp. <i>heliophila</i>	SP		

**Polygon Natural Community Classification:**

**Primary:** *Elymus lanceolatus*-*Stipa comata*

**Secondary:** *Schizachyrium scoparium*-*Carex inops* ssp. *heliophila*

**Ownership Classification:** 4

**Exotic Comments:** Exotics noted were perennial grasses, primarily *Poa pratensis* in mesic sites, such as ephemeral drainages.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 3

**Survey Intensity Comments:** Good geographic coverage across polygon, however, access limited inventory in portions. REA sampling methodology utilized.

**Outstanding Sites:** None

## REA Summary Form

**Polygon Number:** 55 (MT)

### **Polygon Description:**

Rolling unglaciated grassland plains interspersed with badlands, which increase along the Missouri River Breaks and tributaries. The prevailing shale landscapes are dominated by *Pascopyrum smithii* with or without *Artemisia tridentata*, and the rest of the plains have *Stipa comata*-*Bouteloua gracilis*. Woodland and forest vegetation, and most of the sand-associated vegetation, are restricted to the Missouri Breaks setting. The wetland vegetation occurs along ephemeral to temporarily and seasonally-inundated watercourses which are typically in settings of low-grade alkaline flats, but also include small headland springs and seeps, and small alkaline swales.

### **Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Artemisia tridentata</i> / <i>Pascopyrum smithii</i>	M (Badlands)		
<i>Pascopyrum smithii</i> -unknown	M (upland), and mono-dominant SP (wetland)		
<i>Stipa comata</i> - <i>Bouteloua gracilis</i>	M		
<i>Artemisia cana</i> /unknown.	LP		
<i>Pinus ponderosa</i> / <i>Pseudoregneria spicata</i>	LP		
<i>Stipa comata</i> - <i>Carex filifolia</i>	LP		
<i>Atriplex confertifolia</i>	SP		
<i>Bouteloua gracilis</i>	SP		
<i>Calamovilfa longifolia</i> +/- <i>Yucca glauca</i>	SP		
<i>Carex lanuginosa</i>	SP		
<i>Carex praegracilis</i>	SP		
<i>Chrysothamnus nauseosus</i> / <i>Pseudoregneria spicatum</i>	SP		
<i>Distichlis stricta</i>	SP		
<i>Eleocharis palustris</i>	SP		
<i>Fraxinus pennsylvanica</i> /unknown	SP		
<i>Juniperus horizontalis</i> / <i>Pseudoregneria spicatum</i>	SP		
<i>Juniperus scopulorum</i> / <i>Oryzopsis micrantha</i>	SP		
<i>Juniperus scopulorum</i> / <i>Pseudoregneria spicatum</i>	SP		
<i>Pinus flexilis</i> / <i>Pseudoregneria spicatum</i> (in Hell Creek SP)	SP		
<i>Pseudoregneria spicatum</i>	SP		
<i>Pseudotsuga menziesii</i> /unknown	SP		
<i>Sarcobatus vermiculatus</i> - <i>Artemisia cana</i> / <i>Pascopyron smithii</i>	SP		
<i>Puccinellia nuttallii</i>	SP		
<i>Scirpus pungens</i>	SP		

### **Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii* with or without *Artemisia tridentata*

**Secondary:** *Stipa comata*-*Bouteloua gracilis*

### **Ownership Classification:** 2

**Exotic Comments:** Terrestrial noxious weeds are few or absent. *Bromus tectorum* is widespread. Many bays and flats bordering Fort Peck Reservoir are heavily infested by tamarisk.

### **Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** No activity

**Cropland Conversion Rating: 2**

**Preliminary Conservation Significance Rating: 2**

**Survey Intensity Comments:** There were no REA records collected for this polygon and coverage is incomplete for the matrix types. The information is based on notes from a 1993 sensitive plant survey, and intensive sampling on the Charles M Russell NWR at the Limber Pine RNA in 1997.

**Outstanding Sites:** Much of the most diverse habitat is found in the most broken topography in CMR NWR. Seven Blackfoot Creek, visited in the course of sensitive species survey, warrants community diversity inventory.

## REA Summary Form

**Polygon Number:** 57 (MT)

**Polygon Description:**

The dominant landscape feature of Polygon 57 is the breaks of the Missouri River which form the north boundary. The southern portion of the polygon is characterized by gently rolling uplands. Soils are derived primarily from sandstones of the Fort Union Formation. Some hills are topped by clinker, clay metamorphosed by ancient burning coal seams. Stream terraces are generally dominated by *Artemisia cana/Pascopyrum smithii*. Gentle slopes and uplands support *Pascopyrum smithii-Stipa comata*, while steeper slopes with less developed soils have *Juniperus horizontalis/Schizachyrium scoparium* on cool aspects or stands of *Schizachyrium scoparium* on warm sites.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii-Stipa comata	M		
Artemisia cana/Pascopyrum smithii	LP		
Juniperus horizontalis/Schizachyrium scoparium	SP		
Eroding Great Plains Badlands Sparse Vegetation	LP		
Artemisia tridentata/Pascopyrum smithii	SP		
Schizachyrium scoparium-Carex filifolia	SP		
Rhus trilobata/Schizachyrium scoparium	SP		
Pascopyrum smithii-Nasella viridula	SP		
Stipa comata-Bouteloua gracilis-Carex filifolia	LP		
Pascopyrum smithii-Bouteloua gracilis	SP		
Fraxinus pennsylvanica/Symphoricarpos occidentalis	SP	Eues	1
Sheperdia argentea	SP		
Schizachyrium scoparium-Muhlenbergia cuspidata	SP		
Scirpus pungens	SP		
Scirpus maritimus	SP		
Distichilis spicata	SP		

**Polygon Natural Community Classification:**

**Primary:** Pascopyrum smithii-Stipa comata

**Secondary:** Juniperus horizontalis/Schizachyrium scoparium

**Ownership Classification:** 3

**Exotic Comments:** Leafy spurge is restricted to ravine bottoms in scattered locations.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** Limited disturbance associated with oil well drill sites.

**Cropland Conversion Rating:** 2 (restricted to uplands)

**Preliminary Conservation Significance Rating:** 2

**Survey Intensity Comments:** This polygon was extensively covered using REA sampling methodology.

**Outstanding Sites:** None

## REA Summary Form

**Polygon Number:** 58 (MT)

**Polygon Description:**

Rolling uplands transitioning to deeply dissected breaks and culminating in riparian forest along the Missouri River. Upland grasslands are dominated by *Pascopyrum smithii* communities. Dissected breaks are characterized by deeply incised ravines and steep north facing slopes. These areas are frequently dominated by *Fraxinus pennsylvanica*-*Ulmus americana*-*Prunus virginiana* woodland. Stream terraces are generally dominated by *Artemisia cana*/*Pascopyrum smithii*. Gentle slopes and uplands support *Pascopyrum smithii*-*Stipa comata*. Steep slopes with less developed soils have *Juniperus horizontalis*/*Schizachyrium scoparium* on cool aspects and stands of *Schizachyrium scoparium* on warm sites. Sparsely vegetated slopes occurred on the most erodible soils, generally with south and west facing aspects. A steep, eroded cut along the Missouri supports a previously undescribed community, preliminarily identified as *Chrysothamnus nasuseosus*/*Elymus lanceolatus* shrub herbaceous vegetation.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii-Stipa comata	M		
(Fraxinus pennsylvanica-Ulmus americana-Prunus virginiana)	LP	Eues	3
Eroding Great Plains Badlands Sparse vegetation	LP		
Juniperus horizontalis/Schizachyrium scoparium	SP		
Artemisia cana/Pascopyrum smithii	LP		
Stipa comata-Bouteloua gracilis-Carex filifolia	SP		
Schizachyrium scoparium-Muhlenbergia cuspidata	SP		
Symphoricarpos occidentalis	SP	Eues	2
Populus deltoides-Fraxinus pennsylvanica	LP	Eues	2
(Chrysothamnus nasuseosus/Elymus lanceolatus)	LP		
Hordeum jubatum	SP		
Pascopyrum smithii-Nasella viridula	LP		

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Stipa comata*

**Secondary:** *Fraxinus pennsylvanica*-*Ulmus americana*-*Juniperus scopulorum*

**Ownership Classification:** 3

**Exotics Comments:** Leafy spurge abundant in many of the ravine bottoms and appeared to be spreading into herbaceous and shrub communities.

**Land-use Disturbance Rating:** 3

**Land-use Disturbance Comments:** Extensive disturbance from oil exploration and development has resulted in numerous well sites, abandoned pads, and road construction.

**Cropland Conversion Rating:** 3 for most of polygon (1 in upland mixed-grass)

**Preliminary Conservation Significance Rating:** 3

**Survey Intensity Comments:** Completed good geographic coverage of the polygon using standard sampling technique.

**Outstanding Sites:** None

## REA Summary Form

**Polygon Number:** 59 (MT)

**Polygon Description:**

Breaks and adjoining benches along the Fergus River. Rough benches above the river valley dominated by *Artemisia tridentata/Pascopyrum smithii*. Ravines draining to the Fergus River are primarily vegetated by *Pinus ponderosa/Pseudoroegneria spicata*, with *Pseudotsuga menziesii/Pseudoroegneria spicata* associations occurring in mesic locations. Steep eroding slopes immediately above the river valley are dominated by *Artemisia tridentata/Pseudoroegneria spicata* and large areas of sparsely vegetated slopes. River benches and riparian have been extensively modified, but small areas of *Populus deltoides/Symphoricarpos occidentalis* remain.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pinus ponderosa/Pseudoroegneria spicata	LP		
Artemisia tridentata/Pascopyrum smithii	LP	Brja	2
Artemisia cana/Pascopyrum smithii	LP	Popr	2
Artemisia tridentata/Pseudoroegneria spicata	LP		
Eroding Great Plains Badlands Sparse vegetation	LP		
Pascopyrum smithii-Stipa comata	LP		
Pseudotsuga menziesii/Pseudoroegneria spicata	LP		
Calamovilfa longifolia-Schizachyrium scoparium	SP		
Pseudoroegneria spicata-Muhlenbergia cuspidata	SP		
Calamovilfa longifolia-Carex filifolia	SP		
Populus deltoides/Symphoricarpos occidentalis	SP		

**Polygon Natural Community Classification:**

**Primary:** Pinus ponderosa/ Pseudoroegneria spicata

**Secondary:** Artemisia tridentata/Pascopyrum smithii

**Ownership Classification:** 4

**Exotic Comments:** *Bromus japonicus* was relatively abundant in shrub grasslands and *Poa pratensis* in mesic areas.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:**

**Cropland Conversion Rating:** 3

**Preliminary Conservation Significance Rating:** 3

**Survey Intensity Comments:** Poor access limited sampling to a small area of the polygon, however, travel routes did provide a good cross-section of the polygon's communities. Extensive sampling techniques were used, spending less time at stopping points to identify communities.

**Outstanding Sites:** None

## REA Summary Form

**Polygon Number:** 60 (ND)

**Polygon Description:**

This polygon is found adjacent to the Missouri River valley and includes steep barren badlands, deeply dissected valleys, and moderately rolling topography on the uplands. The area includes large permanent and intermittent streams with wooded *Fraxinus pennsylvanica-Ulmus americana-Acer negundo* riparian areas; the upland slopes have shrub thickets with *Shepherdia argentea*; and the upper rolling areas have grassland types with *Stipa comata-Bouteloua gracilis* and *Pascopyrum smithii-Nasella* types.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic spp</u>	<u>Rating</u>
Stipa comata-Bouteloua gracilis-Carex filifolia	LP		
Pascopyrum smithii-Nasella viridula	M		
Fraxinus pennsylvanica/Prunus virginiana woodland	LP		
Calamovilfa longifolia-Carex filifolia	SP		
Symphoricarpos occidentalis	LP		
Shepherdia argentea	SP		
Fraxinus pennsylvanica-Ulmus americana-Acer negundo	LP		
Schizachyrium scoparium-Bouteloua spp./Carex filifolia	LP		
Juniperus horizontalis/Schizachyriums scoparium	SP		
Prunus virginiana	SP		
Eleagnus commutata/Pascopyrum smithii	SP		
Populus tremuloides/Prunus virginiana	SP		
Andropogon gerardii-Schizachyrium scoparium western hillslope	SP		
Spartina pectinata-Scirpus pungens	SP		

**Polygon Natural Community Classification:**

**Primary:** Pascopyrum smithii-Nasella viridula  
**Secondary:** Stipa comata-Bouteloua gracilis-Carex filifolia

**Ownership Classification:** 1

**Exotic Comments:** Exotics are primarily introduced grasses.

**Land-use Disturbance Rating:** 2

**Land-use Disturbance Comments:** Land-use disturbance includes oil and gas wells and cropland conversion.

**Cropland Conversion Rating:** 3

**Preliminary Conservation Significance Rating:** 2-3

**Survey Intensity Comments:** Good coverage.

**Outstanding Sites:** None noted.

REA Summary Form

Polygon Number: 61 (MT)

Polygon Description:

Polygon 61 ranges from the foothills of the Highwood Mountains to moderately dissected grasslands on sedimentary shale soils. Higher elevation grasslands are mesic, being dominated by *Pascopyrum smithii*-*Nasella viridula* interspersed with *Symphoricarpos occidentalis* shrubland in ravines and depressions. Coarse soil outcroppings in portions of the foothills support *Rhus trilobata*/*Pseudoroegneria spicata* and *Schizachyrium scoparium*-*Carex filifolia* associations. Shale soils support *Artemisia tridentata*/*Pascopyrum smithii* and *Pascopyrum smithii*-*Stipa comata* associations.

This polygon encompasses the Square Butte Natural Area which was not inventoried. Numerous additional communities are associated with this area that are not represented in the list below.

Polygon Natural Communities Summary:

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Pascopyrum smithii</i> - <i>Nasella viridula</i>	M		
<i>Artemisia tridentata</i> / <i>Pascopyrum smithii</i>	LP		
<i>Symphoricarpos occidentalis</i>	SP		
<i>Pascopyrum smithii</i> - <i>Stipa comata</i>	LP		
<i>Rhus trilobata</i> / <i>Pseudoroegneria spicata</i>	SP		
<i>Schizachyrium scoparium</i> - <i>Carex filifolia</i>	SP		
Eroding Great Plains Badlands Sparse vegetation	LP		
<i>Sarcobatus vermiculatus</i> / <i>Pascopyrum smithii</i>	SP		
<i>Populus deltoides</i> / <i>Symphoricarpos occidentalis</i>	SP		

Polygon Natural Community Classification:

Primary: *Pascopyrum smithii*-*Nasella viridula*  
Secondary: *Artemisia tridentata*/*Pascopyrum smithii*

Ownership Classification: 1

Exotic Comments: Few exotics were noted, however, sampling and time of year were not conducive for locating these species.

Land-use Disturbance Rating: 1

Land-use Disturbance Comments: None

Cropland Conversion Rating: 3

Preliminary Conservation Significance Rating: 2

Survey Intensity Comments: Poor access limited sampling within the polygon, however, travel routes did provide a good cross-section of the polygon's communities. Extensive sampling techniques were used, spending less time at stopping points to identify communities and exotics.

Outstanding Sites: None

## REA Summary Form

**Polygon Number:** 64 (ND)

**Polygon Description:**

This polygon includes the Little Missouri Badlands and Missouri River Badlands, an area of deeply dissected valleys, steep barren highly erodible badlands, and rolling upland prairie. At the lowest elevations, the river bottoms have *Populus deltoides* and *Fraxinus pennsylvanica* floodplain forests. Along the badlands valleys, shrublands such as *Artemisia cana* and *Shepherdia argentea* are found. Upland woodlands include *Juniperus scopulorum*, *Quercus macrocarpa*, and *Fraxinus pennsylvanica*. The upland prairies are dominated by *Pascopyrum smithii*, *Schizachyrium scoparium*, and *Stipa comata* associations.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic spp</u>	<u>Rating</u>
Pascopyrum smithii-Nasella viridula	M		
Stipa comata-Bouteloua gracilis-Carex filifolia	LP		
Schizachyrium scoparium-Bouteloua spp./Carex filifolia	LP		
Symphoricarpos occidentalis	LP		
Calamovilfa longifolia-Carex filifolia	SP		
Shepherdia argentea	SP		
Quercus macrocarpa/Prunus virginiana	SP		
Fraxinus pennsylvanica/Prunus virginiana woodland	LP		
Juniperus scopulorum/Oryzopsis micrantha	SP		
Rhus aromatica	SP		
Juniperus horizontalis/Schizachyrium scoparium	SP		
Populus deltoides(Salix amygdaloides)/Salix exigua	LP		
Populus deltoides-Fraxinus pennsylvanica	LP		
Fraxinus pennsylvanica-Ulmus americana-Acer negundo	LP		
Artemisia cana/Pascopyrum smithii	SP		
Populus tremuloides/Prunus virginiana	SP		
Betula occidentalis/Juniperus horizontalis	SP		
Atriplex convertifolia/Artemisia tridentata	SP		
Prunus virginiana	SP		
Betula papyrifera/Corylus cornuta	SP		
Salix exigua	SP		
Pascopyron smithii-Distichlis spicata	SP		
Amelanchier alnifolia	SP		
Spartina pectinata-Scirpus pungens	SP		
Eleagnus commutata/Pascopyrum smithii	SP		
Crataegus chrysocarpa	SP		
Potentilla fruticosa/Schizachyrium scoparium	SP		

**Polygon Natural Community Classification:**

**Primary:** Pascopyrum smithii-Nasella viridula  
**Secondary:** Stipa comata-Bouteloua gracilis-Carex filifolia

**Ownership Classification:** 1

**Exotic Comments:** Exotics are primarily introduced grasses, *Agropyron cristatum*, *Bromus inermis*, *Poa pratensis*, and *Bromus japonicus*, and occur at low levels.

**Land-use Disturbance Rating: 1**

**Land-use Disturbance Comments:** Land-use disturbance includes oil and gas wells and cropland conversion.

**Cropland Conversion Rating: 2**

**Preliminary Conservation Significance Rating:** 1; high quality, low disturbance.

**Survey Intensity Comments:** Good coverage.

**Outstanding Sites:** T149, R92 Sec 32.

## REA Summary Form

**Polygon Number:** 65(ND)

**Polygon Description:**

This polygon includes the Little Missouri Badlands, an area of deeply dissected valleys, steep barren highly erodible badlands, and rolling upland prairie. At the lowest elevations, the Little Missouri River has *Populus deltoides* and *Fraxinus pennsylvanica* floodplain forests. Along the badlands valleys, shrublands such as *Artemisia cana* and *Shepherdia argentea* are found. Upland woodlands include *Juniperus scopulorum* and *Fraxinus pennsylvanica*. The upland prairie types are dominated by *Pascopyrum smithii* and *Stipa comata* types.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic spp</u>	<u>Rating</u>
Pascopyrum smithii-Nasella viridula	M		
Schizachyrium scoparium-Bouteloua spp./Carex filifolia	LP		
Stipa comata-Bouteloua gracilis-Carex filifolia	LP		
Symphoricarpos occidentalis	LP		
Calamovilfa longifolia-Carex filifolia	SP		
Artemisia tridentata/Pascopyron smithii	SP		
Shepherdia argentea	SP		
Fraxinus pennsylvanica/Prunus virginiana woodland	LP		
Juniperus scopulorum/Oryzopsis micrantha	SP		
Andropogon gerardii-Schizachyrium scoparium western hillslope	SP		
Rhus aromatica	SP		
Juniperus horizontalis/Schizachyrium scoparium	SP		
Prunus virginiana	SP		
Pascopyrum smithii-Distichlis spicata	SP		
Spartina pectinata-Scirpus pungens	SP		
Sarcobatus vermiculatus/Pascopyrum smithii	SP		
Populus deltoides(Salix amygdaloides)/Salix exigua	LP		
Populus deltoides-Fraxinus pennsylvanica	LP		
Quercus macrocarpa/Prunus virginiana	SP		
Quercus macrocarpa/Corylus cornuta	SP		
Populus tremuloides/Prunus virginiana	SP		
Pinus ponderosa/Prunus virginiana	LP		
Pinus ponderosa/Pseudoroegneria spicata	LP		
Atriplex convertifolia/Artemisia tridentata	SP		
Distichlis spicata-Hordeum jubatum-Sporobolus airoides	SP		
Potentilla fruticosa/Schizachyrium scoparium	SP		

**Polygon Natural Community Classification:**

**Primary:** Pascopyrum smithii-Nasella viridula  
**Secondary:** Stipa comata-Bouteloua gracilis-Carex filifolia

**Ownership Classification:** 1

**Exotic Comments:** Exotics are moderately abundant and are comprised primarily of introduced grasses, *Agropyron cristatum*, *Bromus inermis*, *B. japonicus*, and *Poa pratensis*. *Euphorbia esula* is also locally abundant.

**Land-use Disturbance Rating: 2**

**Land-use Disturbance Comments:** Land-use disturbance includes oil and gas wells and cropland conversion.

**Cropland Conversion Rating: 2**

**Preliminary Conservation Significance Rating:** 1-2; largest polygon in North Dakota.

**Survey Intensity Comments:** Good coverage.

**Outstanding Sites:** None noted.

## REA Summary Form

**Polygon Number:** 65 (MT)

**Polygon Description:**

The topography of this polygon is gently undulating with small areas of badlands. Elevations range between 2,200 and 2,700 ft. Badlands or highly dissected topography are scattered on the higher swells. The badlands are associated with alluvial, high clay component soils. Some areas have highly diverse sedimentary substrates that vary considerably in short distances. The northern portion has obviously been glaciated or is mantled with various forms of drift. *Pascopyrum smithii*-*Stipa comata* is the matrix community type of uplands with heavier soils and gives way to the *P. smithii* alluvial bottom type on positions lower in the landscape. *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* is the predominant type on sandier soils, such as loams or sandy loams. The first and occasionally second terraces above drainages usually support grazing-degraded *Artemisia cana*/*Pascopyrum smithii* community type; grazing-induced conversion to *A. cana*/*Poa pratensis* or *A. cana*/annual bromes is not unusual.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii Clay Pan-Alluvial Bottom	LP-M		
Stipa comata-Bouteloua gracilis-Carex filifolia	M		
Pascopyrum smithii-Stipa comata	LP-M		
E. lanceolatus var. lanceolatus-Bouteloua gracilis	M		
Schizachyrium scoparium	SP		
Calamovilfa longifolia-Carex filifolia	SP		
Schizachyrium scoparium-Calamovilfa longifolia	SP		
Calamovilfa longifolia-Stipa comata	SP		
Schizachyrium scoparium-Bouteloua spp.-Carex filifolia	SP-LP		
Symphoricarpos occidentalis/Pascopyrum smithii	SP		
Artemisia cana/Pascopyrum smithii	SP-LP		
Artemisia cana/Poa pratensis	SP-LP		
Symphoricarpos occidentalis/Poa pratensis	SP-LP		
Juniperus horizontalis/Schizachyrium scoparium	SP		
Krascheninnikovia lanata alliance	SP		
Fraxinus pennsylvanica temporarily flooded forest alliance	SP	Popr, Arma, Urdi	2
Eroding G. P. badlands sparse vegetation	SP		
Eriogonum pauciflorum/Elymus lanceolatus var. lanceolatus	SP		
Fraxinus pennsylvanica-(Ulmus americana)-Acer negundo	SP		
Pseudoroegneria spicata-Poa secunda	SP		
Shepherdia argentea temporarily flooded shrubland	SP		

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Stipa comata*

**Secondary:** *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* & *P. smithii* Clay Pan - Alluvial Bottom

**Ownership Classification:** 4

**Exotic Comments:** *Bromus tectorum*, *B. japonicus* and *B. inermis* mostly distributed adjacent to roads but invading into native vegetation. *Poa pratensis* has colonized most mesic environments, such as *Symphoricarpos occidentalis* stands and woody draws.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** This landscape is notably intact and not interrupted by croplands or other developments at least in the core portion that was traversing the easternmost portion of Wibaux County.

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 2

**Survey Intensity Comments:** Inventory focused on public lands and easements and secondarily on private non-posted lands, with direct road access. Only the main north-south Wibaux county was traversed; probably the woody draws and any wetlands were slighted by this sampling approach.

**Outstanding Sites:** No outstanding sites were noted but the general undisturbed nature of the landscape bodes well for future inventory.

## REA Summary Form

**Polygon Number:** 67 (MT)

### **Polygon Description:**

This landscape is comprised of low relief, yet strongly undulating prairie that drains to the broad bottomlands of the Redwater River. Several tributaries drain into the Redwater, including Cow, Hay, and Alkali Creeks. The floodplain of the Redwater River in the stretch encompassed by this polygon is notable for being relatively undisturbed. The uplands are all native prairie with little agriculture and few grazing improvements. Cattle stocking rates appeared light to moderate and range condition generally was fair to good. There is nothing remarkable about inventoried portions of polygon, just good to high quality examples of the most ubiquitous prairie community types, *Pascopyrum smithii*-*Stipa comata* and *Pascopyrum smithii*-*Nasella viridula*, as well as, *Juniperus horizontalis*/*Schizachyrium scoparium* on the limited exposures of eroding slopes.

### **Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii-Stipa comata-Bouteloua gracilis	M	Brte, Ciar	
Stipa comata-Bouteloua gracilis	LP		
Pascopyrum smithii-Nasella viridula	M-LP		
Schizachyrium scoparium-Bouteloua gracilis-Carex filifolia	LP		
Juniperus horizontalis/Pseudoroegneria spicata	SP		
Pseudoroegneria spicata-Carex filifolia	SP		
Pascopyrum smithii herbaceous vegetation	LP		
Juniperus horizontalis/Schizachyrium scoparium	SP		
Schizachyrium scoparium-Muhlenbergia cuspidata	SP		

### **Polygon Natural Community Classification:**

**Primary:** Pascopyrum smithii-Stipa comata-Bouteloua gracilis

**Secondary:** Pascopyrum smithii-Nasella viridula

### **Ownership Classification:** 1

**Exotic Comments:** *Bromus tectorum* and *Cirsium arvense* common in overgrazed pastures and along roadsides

### **Land-use Disturbance Rating:** 2

**Land-use Disturbance Comments:** Scattered tracts of dry-land farming.

### **Cropland Conversion Rating:** 1

### **Preliminary Conservation Significance Rating:** 2

**Survey Intensity Comments:** Inventory focused on public lands and easements and secondarily on private non-posted lands, with direct road access. As a result, inventory was focused in the Dawson County portion of the polygon in the immediate vicinity of the Redwater River.

**Outstanding Sites:** The Redwater River corridor should be further inventoried. It appears the corridor could support good condition riparian sites (considering it is not now excluded from grazing and cursory examination indicates a lack of degradation.)

REA Summary Form

Polygon Number: 73 (MT)

Polygon Description: Unglaciaded plains underlain by shale and traversed by ridges, apparently dominated by sagebrush steppe. Only a small fraction of the area was seen, so the description is incomplete.

Polygon Natural Communities Summary:

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Artemisia tridentata/Pascopyrum smithii	M		
Artemisia tridentata/Elymus lanceolatus	LP		
Pinus ponderosa/Carex heliophila	LP		
Calomovilfa longifolia	SP		
Carex heliophila	SP		
Elymus lanceolatus	SP		
Juniperus horizontalis/Pseudoregneria spicata	SP		

Polygon Natural Community Classification:

Primary: Artemisia tridentata/Pascopyrum smithii  
Secondary:

Ownership Classification: 4

Exotic Comments: *Melilotus* spp. is widespread

Land-use Disturbance Rating: 1

Land-use Disturbance Comments:

Cropland Conversion Rating: 3

Preliminary Conservation Significance Rating:

Survey Intensity Comments: Sampling was conducted below standard procedures with only one REA site survey summary form completed. Information was also taken from the Lesica report on the Warhorse Acid Shale area. The prevailing plains are poorly documented.

Outstanding Sites: Warhorse Acid Shale ACEC

## REA Summary Form

**Polygon Number:** 74 (MT)

**Polygon Description:**

Gently rolling tablelands characterize the uplands with shallowly to moderately incised steep-sided drainages feeding the major drainage, Burns Creek. Burns Creek supports mostly continuous stands of *Populus deltoides* mixed with *Faxinus pennsylvanica*. Woody draws are relatively numerous for eastern Montana. Generally these communities are narrow and dominated by *F. pennsylvanica* and *Prunus virginiana* with introduced graminoids in the undergrowth. Cattle have severely impacted the composition of these woody draws converting the undergrowth largely to introduced pasture grasses. The rolling uplands are dominated by *Pascopyrum smithii*-*Stipa comata* (*Carex filifolia*) on finer-textured soils and *Stipa comata*-*Carex filifolia* on sandy loams to coarser-textured substrates. Grazing, dryland farming, and *Agropyron cristatum*-dominated CRP plantings of tablelands has largely usurped the conservation potential within this polygon.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii-Stipa comata-(Carex filifolia)	M		
Pascopyrum smithii alluvial bottom	SP		
Stipa comata-Carex filifolia	LP-SP		
Fraxinus pennsylvanica/Symphoricarpos occidentalis	SP		
Juniperus horizontalis/Schizachyrium scoparium	SP		
Juniperus horizontalis/Carex filifolia	LP		
Schizachyrium scoparium-Carex filifolia	SP		
Calamovilfa longifolia-Carex filifolia	SP		
Symphoricarpos occidentalis/Poa pratensis	SP		
Pseudoroegneria spicata-Stipa comata	SP		

**Polygon Natural Community Classification:**

**Primary:** Pascopyrum smithii-Stipa comata-(Carex filifolia)  
**Secondary:** Stipa comata-Carex filifolia                      SP

**Ownership Classification:** 4

**Exotic Comments:** Much of tableland has been seeded to *Agropyron cristatum*; *Bromus inermis* seeded into roadsides is expanding across pastures, as is *B. tectorum*. Areas heavily grazed have experienced large increase in *Selaginella densa* and *Bromus tectorum* but generally there are few noxious weeds.

**Land-use Disturbance Rating:** 3

**Land-use Disturbance Comments:** Seeding of *Agropyron cristatum* has been applied across much of the polygon, especially the tablelands and gentle slope conditions.

**Cropland Conversion Rating:** 1

**Preliminary Conservation Significance Rating:** 3

**Survey Intensity Comments:** Access was fairly restricted but judging by topographic maps a representative portion of the lower relief terrain was inventoried. More highly dissected and badlands terrain and associated plant communities in the northern portion of the polygon were inaccessible and not described.

**Outstanding Sites:** The only habitats warranting further inventory are the wooded draws; no outstanding sites were documented.

## REA Summary Form

**Polygon Number:** 75 (MT)

**Polygon Description:** This is a big, heterogeneous area that is over 200 miles long. Rolling and dissected plains of the Fort Union group are the settings for the *Pascopyrum smithii*-*Stipa comata* association. Tablelands and valley slopes with fine sand are dominated by *Stipa comata*-*Carex filifolia*, mainly along the east end above the Yellowstone Valley. Escarpments in these settings harbor biogeographically significant and unusual types, including a *Pseudoregneria spicata* matrix. The Hell Creek and Judith River Formations have more alkaline, heavier soils that correspond with dominance by *Pascopyrum smithii* with or without *Artemisia tridentata* in the more thinsoil settings. In the broad alkaline flats of the Hell Creek, there are *Sarcobatus vermiculatus*/*Pascopyrum smithii* flats that border on matrix extensiveness.

### Polygon Natural Communities Summary:

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Artemisia tridentata</i> / <i>Pascopyrum smithii</i>	M?	Meof	
<i>Pascopyrum smithii</i> (+ <i>Bouteloua gracilis</i> )	M, LP	Brja, Brte	
<i>Pseudoregneria spicata</i>	M?		
<i>Pascopyrum smithii</i> - <i>Stipa comata</i>	M, LP		
<i>Sarcobatus vermiculatus</i> / <i>Pascopyrum smithii</i> + <i>Artemisia tridentata</i>	M?	Brja	
<i>Stipa comata</i> - <i>Carex filifolia</i>	M		
<i>Artemisia cana</i> / <i>Pascopyrum smithii</i>	LP		
<i>Calamovilfa longifolia</i>	LP		
<i>Chrysothamnus nauseosus</i> / <i>Eriogonum pauciflorum</i>	LP		
<i>Juniperus horizontalis</i> / <i>Pseudoregneria spicata</i>	LP		
<i>Pascopyrum smithii</i> - <i>Nasella viridula</i>	LP		
<i>Pinus ponderosa</i> / <i>Pseudoregneria spicata</i>	LP		
<i>Pseudoregneria spicata</i> + <i>Carex filifolia</i> or <i>Bouteloua gracilis</i>	LP, SP		
<i>Schizachyrium scoparium</i>	LP, SP		
<i>Stipa comata</i> - <i>Bouteloua gracilis</i>	LP		
<i>Koeleria macrantha</i>			
<i>Artemisia longifolia</i>	SP		
<i>Atriplex confertifolia</i>	SP		
<i>Atriplex gardneri</i> / <i>Sporobolus airoides</i> or <i>Poa nevadensis</i>	SP		
<i>Atriplex suckleyi</i>	SP		
<i>Betula occidentalis</i> - <i>Juncus communis</i>	SP		
<i>Chrysothamnus nauseosus</i> / <i>Elymus lanceolatus</i>	SP		
<i>Distichlis stricta</i>	SP		
<i>Fraxinus pensylvanica</i> / <i>Symphoricarpos occidentalis</i>	SP		
<i>Juniperus scopulorum</i> / <i>Oryzopsis micrantha</i>	SP		
<i>Spartina pectinata</i>	SP		
<i>Stipa comata</i> - <i>Carex inops</i> ssp. <i>heliophila</i>	SP		

### Polygon Natural Community Classification:

**Primary:** *Pascopyrum smithii*-*Stipa comata*

**Secondary:** *Pascopyrum smithii*

**Ownership Classification:** 4

**Exotic Comments:** Noxious weeds are limited. Exotic species such as *Bromus tectorum* are widespread, but in some overgrazed settings, there has been a cover conversion without exotics becoming abundant.

**Land-use Disturbance Rating: 1**

**Land-use Disturbance Comments:**

**Cropland Conversion Rating: 2**

**Preliminary Conservation Significance Rating: 2**

**Survey Intensity Comments:** Selection was limited by direct road access, and it spanned all geographic areas, hydrological conditions and surface geology as possible.

**Outstanding Sites:** Little Sheep Mountain (mainly Prairie Co.), possibly Horse Creek plains (Rosebud Co.), possibly Forsyth Natl. Guard training ground (Treasure Co.), and others

## REA Summary Form

**Polygon Number:** 81 (MT)

**Polygon Description:**

Topography ranges from rolling steep hills with north slope erosion patterns (from brow or break in slope) to gentle tablelands with shallow swales and shallowly to moderately incised drainages. Soils have developed mainly in residual materials. The dominant uplands community type is *Elymus lanceolatus-Stipa comata-Bouteloua gracilis*. About 20% of the polygon supports badlands type topography with highly erosional substrates. Bottomlands are dominated by *Artemisia cana*. The potential undergrowth dominants, *Elymus lanceolatus* and *Nasella viridula*, have largely been displaced by *Poa pratensis* and *Bromus tectorum* ( or *B. japonicus*). North-facing slopes are somewhat erosive and support various combinations of *Juniperus horizontalis*, *Schizachyrium scoparium* and, *Pseudoroegneria spicata*. *Artemisia tridentata* ssp. *wyomingensis*-dominated types are very fragmentary or altogether absent, perhaps as result of past fire regimes. Since initial GIRAS determination of land cover/land use there has probably been a significant expansion of the amount of dryland farming and this activity continues as a threat.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Elymus lanceolatus-Stipa comata-Bouteloua gracilis</i>	M	Brte	2
<i>Stipa comata-Carex filifolia</i>	LP		
<i>Elymus lanceolatus-Carex filifolia</i>	LP		
<i>Elymus lanceolatus-Bouteloua gracilis-Carex filifolia</i>	LP-M		
<i>Calamovilfa longifolia-Carex filifolia</i>	SP		
<i>Schizachyrium scoparium-Carex filifolia</i>	SP-LP		
<i>Artemisia cana/Elymus lanceolatus</i>	LP	Brte	3
<i>Artemisia cana/Elymus lanceolatus-Nasella viridula</i>	LP	Brte, Taof	3
<i>Juniperus horizontalis/Pseudoroegneria spicata</i>	SP		
<i>Juniperus horizontalis/Schizachyrium scoparium</i>	SP		
<i>Yucca glauca/Calamovilfa longifolia</i>	SP		
<i>Symphoricarpos occidentalis/Pascopyrum smithii</i>	SP		
<i>Fraxinus pennsylvanica/Symphoricarpos occidentalis</i>	LP		

**Polygon Natural Community Classification:**

**Primary:** *Elymus lanceolatus-Stipa comata-Bouteloua gracilis*  
**Secondary:** *Elymus lanceolatus-Carex filifolia* & *Stipa comata-Carex filifolia*

**Ownership Classification:** 4

**Exotics Comments:** Overall exotics are not significant but *Bromus tectorum* and *B. inermis* apparently are expanding into upbroken prairie and *B. tectorum* (& *B. japonicus*) are expanding on the moist bottomlands.

**Land-use Disturbance Rating:** 2

**Land-use Disturbance Comments:** A significant amount of land has the potential to support dryland farming but is not currently under production.

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 3

**Survey Intensity Comments:** Inventory focused on public lands and easements and secondarily on private non-posted lands, with direct road access; riparian conditions were underrepresented in sampling as were badlands (which comprise approximately 10-15 % of polygon).

**Outstanding Sites:** None were found and probably don't exist in this heavily agricultural area.

## REA Summary Form

**Polygon Number:** 82 (ND)

### **Polygon Description:**

This polygon is found on the rolling morainal hills and outwash plains of the Missouri Coteau. This area has gently to moderately rolling hills interspersed with numerous wetland basins. The vegetation is a complex of grassland types with *Pascopyrum smithii*-*Stipa comata* and *Schizachyrium scoparium* as frequent dominants. Shrub thickets with *Symphoricarpos occidentalis* are common. The wetlands range from temporary swales to large permanent bodies of water.

### **Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic spp</u>	<u>Rating</u>
Pascopyrum smithii-Stipa comata central mixedgrass	M		
Schizachyrium scoparium-Bouteloua curtipendula	LP		
Stipa comata-Bouteloua gracilis-Carex filifolia	LP		
Andropogon gerardii-Schizachyrium scoparium-Panicum virgatum	SP		
Symphoricarpos occidentalis	SP		
Eleagnus commutata/Pascopyrum smithii	SP		
Andropogon gerardii-Schizachyrium scoparium hillslope	SP		
Scirpus spp.-Typha spp. semipermanently flooded	SP		
Carex atherodes seasonally flooded	SP		
Scirpus acutus semipermanently flooded	SP		
Scolochloa festucacea seasonally flooded	SP		
Spartina pectinata-Calamagrostis stricta-Carex sp. temporarily flooded	SP		
Prunus virginiana	SP		
Populus tremuloides/Prunus virginiana	SP		
Potamogeton spp.-Ceratophyllum demersum permanently flooded	SP		
Prunus americana	SP		

### **Polygon Natural Community Classification:**

**Primary:** Pascopyron smithii-Stipa comata

**Secondary:** Schizachyrium scoparium-Bouteloua curtipendula and Stipa comata-Bouteloua gracilis

**Ownership Classification:** 4

**Exotic Comments:** *Poa pratensis* is a frequent codominant in uplands and wet meadows.

**Land-use Disturbance Rating:** 3

**Land-use Disturbance Comments:** Disturbance is primarily cropland conversion.

**Cropland Conversion Rating:** 1

**Preliminary Conservation Significance Rating:** 2

**Survey Intensity Comments:** Good coverage of the majority of the polygon.

**Outstanding Sites:** Davis Ranch Preserve.

## REA Summary Form

**Polygon Number:** 83 (ND)

**Polygon Description:**

This polygon is centered around the Knife River watershed. It includes moderate to steep sloped ravines and side drainages along the River. The dominant vegetation includes *Pascopyrum smithii*-*Nasella viridula* types with the *Schizachyrium scoparium* association also encountered frequently. Shrubs are common to frequent, especially on north-facing slopes. Woodlands are restricted to River bottoms and steep north-facing ravines. Some sandstone, clay, and scoria outcrops are sparsely interspersed in the polygon.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic spp</u>	<u>Rating</u>
Pascopyrum smithii-Nasella viridula	M		
Schizachyrium scoparium-Bouteloua spp./Carex filifolia	LP		
Stipa comata-Bouteloua gracilis/Carex filifolia	LP		
Pascopyrum smithii-Bouteloua gracilis/Carex filifolia	LP		
Fraxinus pennsylvanica-Ulmus americana-Acer negundo Forest	LP		
Symphoricarpos occidentalis	SP		
Fraxinus pennsylvanica/Prunus virginiana Woodland	SP		
Shepherdia argentea	SP		
Andropogon gerardi-Schizachyrium scoparium (Western Great Plains)	SP		
Juniperus horizontalis	SP		
Calamovilfa longifolia-Carex filifolia	SP		
Artemisia cana/Pascopyrum smithii	SP		
Prunus virginiana	SP		
Crateagus chrysocarpa	SP		

**Polygon Natural Community Classification:**

**Primary:** Pascopyrum smithii-Nasella viridula

**Secondary:** Schizachyrium scoparium-Bouteloua spp.-Carex filifolia

**Ownership Classification:** 4

**Exotic Comments:** Exotics are primarily introduced grasses, *Bromus inermis*, *Agropyron cristatus*, and *Poa pratensis*, which occur in moderate amounts in upland herbaceous and woody communities.

**Land-use Disturbance Rating:** 3

**Land-use Disturbance Comments:** Cropland conversion is the primary disturbance.

**Cropland Conversion Rating:** 1

**Preliminary Conservation Significance Rating:** 2

**Survey Intensity Comments:** Completed good coverage of polygon.

**Outstanding Sites:** None noted.

## REA Summary Form

**Polygon Number:** 84 (ND)

**Polygon Description:**

This polygon includes moderately dissected watersheds which drain into the Knife and Missouri Rivers. The uplands above the watersheds are gently rolling. Also included within the polygon is an area of vegetated sand dunes formed by sediment deposition during the last glacial period. The vegetation is primarily *Pascopyrum smithii*-*Nasella viridula* with significant amounts of *Stipa comata*-*Carex filifolia* and *Schizachyrium scoparium* types found on lighter sandy soils. The ravines contain *Fraxinus pennsylvanica*/*Prunus virginiana* woodland types with a variety of associated shrubland types. The sand dunes contain *Calamovilfa longifolia*, *Stipa comata*, and *Andropogon hallii* types.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic spp</u>	<u>Rating</u>
Pascopyrum smithii-Nasella viridula	M		
Schizachyrium scoparium-Bouteloua spp./Carex filifolia	LP		
Stipa comata-Bouteloua gracilis-Carex filifolia	LP		
Symphoricarpos occidentalis	LP		
Calamovilfa longifolia-Carex filifolia	SP		
Shepherdia argentea	SP		
Fraxinus pennsylvanica/Prunus virginiana woodland	LP		
Juniperus scopulorum/Oryzopsis micrantha	SP		
Andropogon gerardii-Schizachyrium scoparium western hillslope	SP		
Andropogon hallii-Calamovilfa longifolia	SP		
Prunus virginiana	SP		
Eleagnus commutata/Pascopyron smithii	SP		
Spartina pectinata-Scirpus pungens	SP		
Amelanchier alnifolia	SP		

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Nasella viridula*

**Secondary:** *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* and *Schizachyrium scoparium*-*Bouteloua* spp.

**Ownership Classification:** 4

**Exotic Comments:** Exotics are primarily introduced grasses, *Bromus inermis*, *Agropyron cristatus*, and *Poa pratensis*, which occur in moderate amounts in upland herbaceous and woody communities.

**Land-use Disturbance Rating:** 3

**Land-use Disturbance Comments:** Land-use disturbance includes open pit coal mining and cropland conversion.

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 3

**Survey Intensity Comments:** Good coverage.

**Outstanding Sites:** None noted.

## REA Summary Form

**Polygon Number:** 85 (MT)

**Polygon Description:**

This polygon comprises the rough breaklands associated with Whoopup, Sand, Dry and Sevenmile Creeks and the Yellowstone River. Most of the surrounding tablelands are in dryland farming and CRP plantings (*Agropyron cristatum*), whereas the polygon is mostly dissected slopes and environments approaching badlands. The polygon includes portions of the active Glendive Oil Field. The predominant vegetation type on uplands is *Pascopyrum smithii*-*Stipa comata*-*Bouteloua gracilis* and *Artemisia tridentata* ssp. *wyomingensis*/*Pseudoroegneria spicata* (on thin soils). On the bottomlands, *Artemisia cana*/*Pascopyrum smithii* occurs as stream-side stringers on the first and second terraces above streams. On erosive slopes *Artemisia tridentata* ssp. *wyomingensis*-*Atriplex confertifolia* is the primary community found on all aspects. Various, heavily grazing-impacted *Populus deltoides*-dominated community types characterize the forested riparian vegetation. The undergrowth of these forested riparian types has been altered ubiquitously.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii-Stipa comata-Bouteloua gracilis	M		
Stipa comata-Carex filifolia	M		
Artemisia cana/Pascopyrum smithii	LP		
Artemisia tridentata ssp. wyomingensis-Atriplex confertifolia	SP-LP		
Artemisia tridentata ssp. wyomingensis/Pseudoroegneria spicata	LP		
Shepherdia argentea/Symphoricarpos occidentalis	SP		
Pascopyrum smithii-Stipa comata	M		
Stipa comata-Bouteloua gracilis	SP-LP		
Pascopyrum smithii alluvial bottoms	LP		
Symphoricarpos occidentalis/Pascopyrum smithii	SP		
Symphoricarpos occidentalis/Poa pratensis	SP		
Yucca glauca/Carex filifolia	SP		
Calamovilfa longifolia-Carex filifolia	SP		
Schizachyrium scoparium-Carex filifolia	LP		
Juniperus horizontalis/Carex filifolia	SM		
Juniperus horizontalis/Pseudoroegneria spicata	SP		
Populus deltoides alliance	SP	Meof, Brte	3
Juncus balticus	SP		
Scirpus pungens	SP		

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Stipa comata*

**Secondary:** *Stipa comata*-*Carex filifolia* & *Stipa comata*-*Bouteloua gracilis*

**Ownership Classification:** 4

**Exotic Comments:** Roadside plantings of *Bromus inermis* is expanding into native prairie. *Bromus tectorum* has invaded overgrazed pastures. *Agropyron cristatum* (and *Melilotus officinalis* to lesser degree) has been planted in uplands as part of CRP and is now volunteering into unplowed prairie.

**Land-use Disturbance Rating:** 2

**Land-use Disturbance Comments:** A portion of Glendive Oil Field (with roads, abandoned and active pads, and general landscape alterations) lies within the polygon. Intensive agriculture surrounds the polygon to the west, north, and south and serve as a source for many weedy species and invaders; a portion of this agricultural land is included within the defined polygon.

**Cropland Conversion Rating:** 3

**Preliminary Conservation Significance Rating:** 3

**Survey Intensity Comments:** Good coverage was obtainable but full survey was curtailed when observation showed this to be a heavily impacted polygon with few high quality elements.

**Outstanding Sites:** No outstanding sites were identified. The extensive bottomlands adjacent to the Yellowstone River appeared to be significantly impacted by overgrazing and conversion to irrigated hayfields; extensive bottomland stands of *Populus deltoides* have had their undergrowth converted to *Poa pratensis* and *Bromus inermis* dominance.

## REA Summary Form

**Polygon Number:** 86 (MT)

**Polygon Description:**

Mostly because of its large size this polygon incorporates much diversity in landforms, physical site variables (such as 1000 ft. elevation range), and biological communities. In the far northern portion highly erodable and dissected badlands are incorporated within Makoshika State Park and extend considerably beyond its boundaries to the south. There are a number of *Pinus ponderosa*-covered ridges in the central portion where a primary feature is Bankhead-Jones lands, once farmed but now planted mostly to crested wheatgrass. The Pine Oil Field occupies the central and southern portion with a highly developed road network, pads, and other operations and facilities that tend to fragment the landscape. The ponderosa pine stands are developed on both sandy and clay substrates. The central and southern landscape is low relief and rather typical prairie with small outcrops of badlands and heavy clay soils; this portion has a much higher proportion of private lands. Overall the dominant types are *Pascopyrum smithii*-*Stipa comata* on the uplands and *Artemisia cana*/*Pascopyrum smithii* on bottomlands (first and second terraces above drainages).

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii-Stipa comata	M	Brte	3
Stipa comata-Bouteloua gracilis-Carex filifolia	M		
Pascopyrum smithii alluvial bottom	LP		
Schizachyrium scoparium-Muhlenbergia cuspidata	SP		
Pascopyrum smithii-Nasella viridula	LP	Eues	1
Calamovilfa longifolia-Stipa comata	LP		
Juniperus horizontalis/Carex filifolia	SP		
Artemisia cana/Pascopyrum smithii	LP	Brja, Brte, Meof, Eues	3
Artemisia tridentata ssp. wyomingensis/Pascopyrum smithii	LP-M	Brja, Brte, Meof	2
Juniperus scopulorum/Oryzopsis micrantha	SP		
Juniperus scopulorum/Pascopyrum smithii	LP-M		
Pinus ponderosa/Juniperus horizontalis	SP		
Pinus ponderosa/Carex inops ssp. heliophila	M-LP	Meof	2
Juniperus horizontalis/Schizachyrium scoparium	SP		
Artemisia tridentata-Atriplex confertifolia	SP		
Spartina pectinata	SP		

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Stipa comata*

**Secondary:** *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia*

**Ownership Classification:** 2

**Exotic Comments:** *Melilotus officinalis* has spread into all types of native vegetation without seeding. *Bromus tectorum* and *B. japonicus* infestation rates are high, especially on moister sites.

**Land-use Disturbance Rating:** 3

**Land-use Disturbance Comments:** The Pine Oil Field, with a multitude of roads and drill pads and ancillary operations, occupies the core of the polygon. Potential fields with privately held mineral rights occur in Makoshika State Park and surrounding areas. The best pine stands occur in the midst of oil fields; these stands are all second growth, having been harvested with the first wave of settlement. Immediately to the west of the Pine Oil Field are extensive turn-back lands (Bankhead - Jones Lands) that have been largely seeded to *Agropyron cristatum*. All bottomlands in the southern portion of the polygon have been severely impacted by grazing or converted to hay meadows.

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 2

**Survey Intensity Comments:** Inventory focused on public lands or patented oil company lands with little attention paid to private lands in the southern portion of polygon.

**Outstanding Sites:** There are a number of potentially "interesting" sites, such as the woodlands dominated by ponderosa pine and *Juniperus scopulorum/Oryzopsis micrantha* that occur on gently rolling surfaces, an unusual position for these types. Unfortunately, these sites are surrounded by oil fields and their attendant dense network of roads.

## REA Summary Form

**Polygon Number:** 87

**Polygon Description:** Unglaciaded gentle plains and rolling uplands derived from shale formations, with abrupt ridges of various sedimentary outcrops. Only a small fraction of the area was seen, so identification of the primary natural community is preliminary

### Polygon Natural Communities Summary:

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii-Stipa comata	M, LP on gravelly ridge		
Pascopyrum smithii	LP		
Artemisia tridentata/Pascopyrum smithii	LP, M in shale flats		
Pascopyrum smithii-Nasella viridula	M		
Stipa comata-Bouteloua gracilis	LP		
Stipa comata-Carex filifolia	LP		
Eleocharis palustris	SP		
Hordeum jubatum	SP		
Pinus ponderosa/Pseudoregneria spicata	SP		
Pseudoregneria spicata	SP		
Sarcobatus vermiculatus/Pascopyrum smithii	SP		

### Polygon Natural Community Classification:

**Primary:** Pascopyrum smithii-Stipa comata

**Secondary:**

**Ownership Classification:** 4

**Exotic Comments:** Exotic species are common, e.g. *Alyssum desertum*, *Taraxacum officinale*.

**Land-use Disturbance Rating:** 2

**Land-use Disturbance Comments:** There is a history of logging throughout.

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 2

**Survey Intensity Comments:** Less than standard sampling procedures were used with only three REA sites inventoried.

**Outstanding Sites:** Dry Lake, possibly Devils Basin

**REA Summary Form**

**Polygon Number:** 88 (ND)

**Polygon Description:**

This polygon includes both rolling to hilly glacial moraine topography and nearly level outwash plains. Wetland basins are numerous and range from small temporary to large permanent wetlands. Vegetation types are primarily *Pascopyrum smithii*-*Stipa comata* types with significant amounts of *Schizachyrium scoparium* types as well. Brush thickets are frequent on hillslopes and ravines with shrub dominants including *Symphoricarpos occidentalis* and *Eleagnus commuta*. A few wooded ravines are found on the steep, mostly north-facing slopes.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic spp</u>	<u>Rating</u>
Pascopyrum smithii-Stipa comata	M		
Schizachyrium scoparium-Bouteloua curtipendula-Stipa spartea	LP		
Stipa comata-Bouteloua gracilis-Carex filifolia	LP		
Symphoricarpos occidentalis	LP		
Eleagnus commutata	SP		
Spartina pectinata-Calamagrostis stricta-Carex spp.	SP		
Scirpus spp.-Typha spp. semipermanently flooded	SP		
Carex atherodes seasonally flooded	SP		
Typha spp. semipermanently flooded	SP		
Andropogon gerardii-Schizachyrium scoparium-Panicum virgatum	SP		
Fraxinus pennsylvanica/Prunus virginiana woodland	LP		
Andropogon gerardii-Schizachyrium scoparium western hillslope	SP		
Prunus virginiana	SP		
Populus tremuloides/Prunus virginiana	SP		
Amelanchier alnifolia	SP		
Crataegus chrysoarpa	SP		

**Polygon Natural Community Classification:**

**Primary:** Pascopyrum smithii-Stipa comata

**Secondary:** Schizachyrium scoparium-Bouteloua curtipendula-Stipa spartea

**Ownership Classification:** 4

**Exotic Comments:** Poa pratensis is a frequent codominant in uplands and wet meadows.

**Land-use Disturbance Rating:** 3

**Land-use Disturbance Comments:** Disturbance is primarily cropland conversion.

**Cropland Conversion Rating:** 1

**Preliminary Conservation Significance Rating:** 1-2

**Survey Intensity Comments:** Good coverage.

**Outstanding Sites:** T144 R73 Sec 25 and 36.

## REA Summary Form

**Polygon Number:** 89 (ND)

**Polygon Description:**

This polygon includes the steep and deeply dissected ravines of the Knife River watershed along with its broad level valley bottom and gently rolling interfluvial areas. The polygon also includes large areas with scoria and clinker deposits at the ground surface. A large wetland basin is found within the polygon boundaries. This is an unusual feature in this unglaciated portion of North Dakota. The major vegetation type is *Pascopyrum smithii*-*Nasella viridula* with significant amounts of *Schizachyrium scoparium*-*Bouteloua spp./Carex filifolia* and *Stipa comata*-*Bouteloua gracilis*.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic spp</u>	<u>Rating</u>
Pascopyrum smithii-Nasella viridula	M		
Schizachyrium scoparium-Bouteloua spp./Carex filifolia	LP		
Stipa comata-Bouteloua gracilis-Carex filifolia	LP		
Symphoricarpos occidentalis	LP		
Calamovilfa longifolia-Carex filifolia	SP		
Shepherdia argentea	SP		
Fraxinus pennsylvanica/Prunus virginiana woodland	LP		
Juniperus horizontalis/Schizachyrium scoparium	SP		
Andropogon gerardii-Schizachyrium scoparium western hillslope	SP		
Crataegus chrysoarpa	SP		
Prunus virginiana	SP		
Artemisia cana/Pascopyrum smithii	SP		
Spartina pectinata-Scirpus pungens	SP		
Typha spp.	SP		

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Nasella viridula*

**Secondary:** *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* and *Schizachyrium scoparium*-*Bouteloua spp.*

**Ownership Classification:** 4

Exotic spp.: Agcr, Brin, Brja, Agre

Exotic Rating: 2

**Exotic Comments:** Exotics are primarily introduced grasses, *Bromus inermis*, *B. japonicus*, *Agropyron cristatum*, and *A. repens*, which occur in moderate amounts in upland herbaceous communities.

**Land-use Disturbance Rating:** 3

**Land-use Disturbance Comments:** Land-use disturbance is primarily cropland conversion.

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 3

**Survey Intensity Comments:** Good coverage.

**Outstanding Sites:** None noted.

## REA Summary Form

**Polygon Number:** 93 (ND)

**Polygon Description:**

This polygon is found on the western edge of the Missouri Coteau and extends along a portion of upper Apple Creek, which drains into the Missouri River. The area on the Coteau has multiple wetlands and rolling hills, while the portion along Apple Creek is characterized by broad intermittent drainages with moderately sloping hills. Vegetation is primarily *Pascopyrum smithii* types with the *Schizachyrium scoparium* type frequent. There are extensive stands of *Symphoricarpos occidentalis*, with few other shrubs or trees.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic spp</u>	<u>Rating</u>
Pascopyrum smithii-Stipa comata	M		
Schizachyrium scoparium-Bouteloua curtipendula-Stipa spartea	LP		
Stipa comata-Bouteloua gracilis-Carex filifolia	LP		
Symphoricarpos occidentalis	LP		
Andropogon gerardii-Schizachyrium scoparium-Panicum virgatum	SP		
Andropogon gerardii-Schizachyrium scoparium western hillslope	SP		
Spartina pectinata-Calamagrostis stricta-Carex spp.	SP		
Calamagrostis stricta-Carex sartwellii-Carex praegracilis- Plantago eriopoda	SP		
Calamovilfa longifolia-Carex filifolia	SP		
Scirpus maritimus-Scirpus acutus semipermanently flooded	SP		
Carex atherodes seasonally flooded	SP		
Prunus virginiana	SP		

**Polygon Natural Community Classification:**

**Primary:** Pascopyrum smithii-Stipa comata

**Secondary:** Schizachyrium scoparium-Bouteloua curtipendula-Stipa spartea and Stipa comata-Bouteloua gracilis-Carex filifolia.

**Ownership Classification:** 4

**Exotic Comments:** Exotics are primarily introduced grasses, *Bromus inermis*, *Agropyron cristatum*, and *Poa pratensis*, which occur abundantly in upland herbaceous communities. *Euphorbia esula* occurs very infrequently.

**Land-use Disturbance Rating:** 3

**Land-use Disturbance Comments:** Land-use disturbance is primarily cropland conversion.

**Cropland Conversion Rating:** 1

**Preliminary Conservation Significance Rating:** 2-3

**Survey Intensity Comments:** Good coverage.

**Outstanding Sites:** None noted.

## REA Summary Form

**Polygon Number:** 96 (MT)

**Polygon Description:** Hilly upland grasslands spanning an elevation gradient that signifies matrix and other community composition shifts.

### **Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Artemisia tridentata/Pascopyrum smithii	M	Brja	2
Stipa comata- Bouteloua gracilis	M		
Stipa comata-Koeleria macrantha	M		
Pascopyrum smithii	LP		
Pascopyrum smithii-Distichilis stricta	LP		
Pinus ponderosa/Pseudoregneria spicata	LP		
Stipa comata-Carex filifolia	LP		
Chrysothamnus nauseosus/Pseudoregneria spicata	SP		
Deschampsia cespitosa (+Juncus balticus)	SP		
Eleocharis palustris	SP		
Pascopyrum smithii-Nasella viridula	SP		
Puccinellia nuttallii	SP		
Spartina gracilis	SP		
Sporobolus airoides	SP		

### **Polygon Natural Community Classification:**

**Primary:** Stipa comata- Bouteloua gracilis (lower perimeter elevations)

**Secondary:** Stipa comata-Koeleria macrantha (center)

**Ownership Classification:** 4

**Exotic Comments:** The alkaline communities in the north end have the highest infestation of exotic species.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** Developments are concentrated close to Big Timber

**Cropland Conversion Rating:** 1; The loamy mesic grasslands on the ridgetops in the center of the area are fragmented by a patchwork of cultivation.

**Preliminary Conservation Significance Rating:** 1

**Survey Intensity Comments:** Less than standard sampling procedures were used. Inventory focused on the road between Shawmu and Big Timber.

**Outstanding Sites:** The Cayuse Hills have relatively well-developed mesic vegetation but the areas seen were highly fragmented.

## REA Summary Form

**Polygon Number:** 97 (ND)

**Polygon Description:**

Breaks and watersheds east of the Missouri River predominant in this polygon. The southern portion has sandstone buttes and outcrops, while the northern area has mostly moderate slopes and few buttes. The topography varies from steep bluffs to moderately sloping coulees to gently rolling uplands. The predominant vegetation is *Pascopyrum smithii*-*Nasella viridula* with *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia*. The most common woodland type is *Fraxinus pennsylvanica*/*Prunus virginiana*, which is found on the ravine slopes.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic spp</u>	<u>Rating</u>
Pascopyrum smithii-Nasella viridula	M		
Schizachyrium scoparium-Bouteloua spp./Carex filifolia	LP		
Stipa comata-Bouteloua gracilis-Carex filifolia	LP		
Symphoricarpos occidentalis	LP		
Fraxinus pennsylvanica/Prunus virginiana woodland	LP		
Calamovilfa longifolia-Carex filifolia	SP		
Andropogon gerardii-Schizachyrium scoparium western hillslope	SP		
Shepherdia argentea	SP		
Quercus macrocarpa/Prunus virginiana	SP		
Juniperus horizontalis	SP		
Populus tremuloides/Prunus virginiana	SP		
Spartina pectinata-Scirpus pungens	SP		
Prunus virginiana	SP		

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Nasella viridula*

**Secondary:** *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia*

**Ownership Classification:** 4

**Exotic Comments:** Exotics are primarily introduced grasses, *Bromus inermis*, *Agropyron cristatum*, and *Poa pratensis*, which occur in moderate amounts in upland herbaceous communities.

**Land-use Disturbance Rating:** 3

**Land-use Disturbance Comments:** Land-use disturbance is primarily cropland conversion.

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 3

**Survey Intensity Comments:** Good coverage.

**Outstanding Sites:** None noted.

**REA Summary Form**

**Polygon Number:** 98 (ND)

**Polygon Description:**

This polygon is found along the moderately to steeply sloping bluffs and breaks along the Missouri River. The area has relatively large wooded ravines and coulees draining east into the Missouri. The uplands above these watersheds are gently to moderately rolling with *Pascopyrum smithii*-*Nasella viridula* the dominant vegetation type. Other common grass types include *Schizachyrium scoparium*-*Bouteloua* spp./*Carex filifolia* and *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia*. The wooded ravines have *Fraxinus pennsylvanica*/*Prunus virginiana* and *Quercus macrocarpa*/*Prunus virginiana* types. Shrubs are frequent on most slopes, with *Shepherdia argentea* most common. The floodplain forest of the Missouri is mostly *Fraxinus pennsylvanica*-*Ulmus americana*-*Acer negundo* and *Populus deltoides*/*Fraxinus pennsylvanica*. Large areas are cleared on the floodplain.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic spp</u>	<u>Rating</u>
Pascopyrum smithii-Nasella viridula	M		
Schizachyrium scoparium-Bouteloua spp./Carex filifolia	LP		
Stipa comata-Bouteloua gracilis-Carex filifolia	LP		
Shepherdia argentea	SP		
Symphoricarpos occidentalis	LP		
Quercus macrocarpa/Prunus virginiana	SP		
Fraxinus pennsylvanica/Prunus virginiana woodland	LP		
Andropogon gerardii-Schizachyrium scoparium western hillslope	SP		
Fraxinus pennsylvanica/Ulmus americana-Acer negundo	LP		
Populus deltoides/Fraxinus pennsylvanica	LP		
Populus tremuloides/Prunus virginiana	SP		
Calamovilfa longifolia-Carex filifolia	SP		
Juniperus horizontalis	SP		
Spartina pectinata-Scirpus pungens	SP		
Prunus virginiana	SP		

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Nasella viridula*

**Secondary:** *Schizachyrium scoparium*-*Bouteloua* spp./*Carex filifolia* and *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia*

**Ownership Classification:** 4

**Exotic Comments:** Exotics are primarily introduced grasses, *Bromus inermis*, *Agropyron cristatum*, and *Poa pratensis*, which occur in moderate amounts in upland herbaceous communities. *Euphorbia esula* occurs infrequently.

**Land-use Disturbance Rating:** 3

**Land-use Disturbance Comments:** Land-use disturbance is primarily cropland conversion.

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 2

**Survey Intensity Comments:** Good coverage.

## REA Summary Form

**Polygon Number:** 99 (ND)

**Polygon Description:**

This polygon is found on the Missouri Coteau in an area of rolling to hilly glacial moraine and ice thrust features, along with relatively level glacial outwash flats. The rolling moraine contains numerous wetlands of various sizes, which range from fresh to brackish. The level outwash areas contain very large, relatively shallow wetlands and lakes which are brackish to alkali. Vegetation on the uplands is primarily *Pascopyrum smithii*-*Stipa comata* along with the *Schizachyrium scoparium*-*Bouteloua curtipendula*-*Stipa spartea* type.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic spp</u>	<u>Rating</u>
<i>Pascopyrum smithii</i> - <i>Stipa comata</i>	M		
<i>Schizachyrium scoparium</i> - <i>Bouteloua curtipendula</i> - <i>Stipa spartea</i>	LP		
<i>Stipa comata</i> - <i>Bouteloua gracilis</i> - <i>Carex filifolia</i>	LP		
<i>Andropogon gerardii</i> - <i>Schizachyrium scoparium</i> - <i>Panicum virgatum</i>	SP		
<i>Spartina pectinata</i> - <i>Calamagrostis stricta</i> - <i>Carex</i> spp.	SP		
<i>Symphoricarpos occidentalis</i>	SP		
<i>Carex atherodes</i> seasonally flooded	SP		
<i>Typha</i> spp.	SP		
<i>Eleagnus commutata</i>	SP		
<i>Scirpus</i> spp.- <i>Typha</i> spp. semipermanently flooded	SP		
<i>Andropogon gerardii</i> - <i>Schizachyrium scoparium</i> western hillslope	SP		
<i>Potamogeton pectinatus</i> - <i>Ruppia maritima</i>	SP		
<i>Calamovilfa longifolia</i> - <i>Carex filifolia</i>	SP		
<i>Prunus virginiana</i>	SP		
<i>Crataegus chrysocarpa</i>	SP		
<i>Populus balsamifera</i>	SP		
<i>Carex aquatilis</i> - <i>Carex</i> spp. rich fen	SP		

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Stipa comata*

**Secondary:** *Schizachyrium scoparium*-*Bouteloua curtipendula*-*Stipa spartea*.

**Ownership Classification:** 4

**Exotic Comments:** *Poa pratensis* is a codominant grass in some grassland communities.

**Land-use Disturbance Rating:** 3

**Land-use Disturbance Comments:** Land use disturbance is primarily cropland conversion.

**Cropland Conversion Rating:** 1

**Preliminary Conservation Significance Rating:** 3

**Survey Intensity Comments:** Good coverage.

**Outstanding Sites:** None noted.

## REA Summary Form

**Polygon Number:** 100 (ND)

**Polygon Description:**

This polygon is found on rolling to hilly morain on the Missouri Coteau. A series of hills within the polygon trends east to west and primarily contains upland grassland types with wooded and shrubby ravines draining down off the hills. The area has limited wetlands within the polygon boundaries, but many wetlands are located at the base of the hills, just outside the polygon. Dominant vegetation is *Pascopyrum smithii*-*Stipa comata* with *Stipa comata* and *Schizachyrium scoparium* types.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic spp</u>	<u>Rating</u>
<i>Pascopyrum smithii</i> - <i>Stipa comata</i>	M		
<i>Schizachyrium scoparium</i> - <i>Bouteloua curtipendula</i> - <i>Stipa spartea</i>	LP		
<i>Stipa comata</i> - <i>Bouteloua gracilis</i> - <i>Carex filifolia</i>	LP		
<i>Symphoricarpos occidentalis</i>	LP		
<i>Fraxinus pennsylvanica</i> / <i>Prunus virginiana</i> woodland	LP		
<i>Andropogon gerardii</i> - <i>Schizachyrium scoparium</i> - <i>Panicum virgatum</i>	SP		
<i>Andropogon gerardii</i> - <i>Schizachyrium scoparium</i> western hillslope	SP		
<i>Spartina pectinata</i> - <i>Calamagrostis stricta</i> - <i>Carex</i> spp.	SP		
<i>Calamovilfa longifolia</i> - <i>Carex filifolia</i>	SP		
<i>Scirpus</i> spp.- <i>Typha</i> spp. semipermanently flooded	SP		
<i>Carex atherodes</i> seasonally flooded	SP		
<i>Prunus virginiana</i>	SP		

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Stipa comata*

**Secondary:** *Schizachyrium scoparium*-*Bouteloua curtipendula*-*Stipa spartea* and *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia*.

**Ownership Classification:** 4

**Exotic Comments:** *Poa pratensis* is codominant in grasslands, whereas *Bromus inermis* is less abundant.

**Land-use Disturbance Rating:** 3

**Land-use Disturbance Comments:** Disturbance is primarily conversion.

**Cropland Conversion Rating:** 1

**Preliminary Conservation Significance Rating:** 3

**Survey Intensity Comments:** Good coverage.

**Outstanding Sites:** None noted.

## REA Summary Form

**Polygon Number:** 101 (MT)

**Polygon Description:** Unglaciaded plains, and escarpments with widespread pine cover of *Pinus ponderosa*/*Pseudoregneria spicata*. The plains matrix community needs confirmation.

### **Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Pascopyrum smithii</i> - <i>Bouteloua gracilis</i>	M		
<i>Pinus ponderosa</i> / <i>Pseudoregneria spicata</i>	M		
<i>Artemisia tridentata</i> / <i>Pascopyrum smithii</i> - <i>Nasella viridula</i> (Note: There may also be a discrete type with PSEREG instead of NESVIR)	LP	Brja	
<i>Pascopyrum smithii</i> - <i>Stipa comata</i>	M		
<i>Pseudoregneria spicata</i>	LP		
<i>Pascopyrum smithii</i> - <i>Bouteloua gracilis</i>	LP		
<i>Stipa comata</i> - <i>Carex filifolia</i>	LP		
<i>Bouteloua curtipendula</i>	SP		
<i>Schizachyrium scoparium</i>	SP		

### **Polygon Natural Community Classification:**

**Primary:** *Pinus ponderosa*/*Pseudoregneria spicata*  
**Secondary:** *Pascopyrum smithii*-*Bouteloua gracilis*?

**Ownership Classification:** 3

**Exotic Comments:**

**Land-use Disturbance Rating:** 2

**Land-use Disturbance Comments:** Developments are concentrated in the wooded hills near Roundup.

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 2

**Survey Intensity Comments:** Less than standard sampling procedures were used with only three REA sites inventoried.

**Outstanding Sites:** None identified

## REA Summary Form

**Polygon Number:** 102 (MT)

**Polygon Description:**

This extensive polygon is comprised of low relief rolling uplands with shallowly incised streams to broken terrain with badlands. Within the badlands, outcrops consist of scoria capped buttes comprised of various heavy textured materials, such as mudstone and bentonite. Much of the terrain seems to have been derived from sandstone. In the more dissected portions, ridges rise 100 to 250 ft. above the valley bottoms. These ridge systems, largely sandstone, support *Pinus ponderosa* woodlands to forest. This polygon also supports much *Artemisia tridentata* ssp *wyomingensis*-dominated steppe that has been heavily grazed. Threats to biodiversity include massive spraying programs that seem to result in an influx of weeds, particularly *Bromus tectorum* and *B. japonicus*.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Calamovilfa longifolia-Stipa comata	LP-M		
Calamovilfa longifolia-Carex inops ssp. heliophila	SP		
Pascopyrum smithii-Stipa comata	M-LP		
Pascopyrum smithii-Nasella viridula	M-LP		
Elymus lanceolatus-Bouteloua gracilis	M-LP		
Elymus lanceolatus-Nasella viridula	LP		
Stipa comata-Carex filifolia	LP-M		
Artemisia cana/Pascopyrum smithii	LP		
Fraxinus pennsylvanica/Symphoricarpos occidentalis	SP		
Symphoricarpos occidentalis/Poa pratensis	SP		
Artemisia tridentata ssp. wyomingensis/Pascopyrum. smithii	M		
Artemisia tridentata ssp. wyomingensis/P. smithii-N. viridula	LP		
A. tridentata ssp. wyomingensis/E. lanceolatus-P. spicata	M-LP		
A. tridentata ssp. wyomingensis/Pseudoroegneria spicata	SP-M		
A. tridentata ssp. wyomingensis/P. smithii- P spicata	LP		
A. tridentata ssp. wyomingensis/Opuntia polyacantha	SP		
A. tridentata ssp. wyomingensis/E. lanceolatus-N. viridula	LP		
A. tridentata ssp. wyomingensis-Atriplex confertifolia	SP		
Rhus aromatica/P. spicata	SP		
Schizachyrium scoparium alliance	SP		
Populus deltoides-Fraxinus pennsylvanica	LP		
Pinus ponderosa/Carex inops ssp. heliophila	LP		
Pinus ponderosa/Pseudoroegneria spicata	SP		
Pinus ponderosa-Juniperus scopulorum	LP		
Scirpus pungens	SP		
Typha latifolia-Scirpus spp. semipermanently flooded	SP		
Juncus balticus	SP		
Eleocharis palustris	SP		
Sarcobatus vermiculatus-A. tridentata ssp. wyomingensis	SP		
Eriogonum pauciflorum	SP		

**Polygon Natural Community Classification:**

**Primary:** Pascopyrum smithii-Stipa comata & A. tridentata ssp. wyomingensis/P. smithii - P. spicata  
**Secondary: Ownership Classification:** Elymus lanceolatus var. lanceolatus-Bouteloua gracilis

**Ownership Classification: 4**

**Exotic Comments:** *Bromus tectorum* (and *B. japonicus*) are virtually ubiquitous but especially dense in *A. cana*/*P. smithii*, *A. tridentata* ssp. *wyomininensis*/*P. smithii* (or *E. lanceolatus*)-*Nasella viridula* and *P. smithii* alluvial flats community types. *Agropyron critatum* is volunteer seeding into native prairie from CRP lands.

**Land-use Disturbance Rating: 1**

**Land-use Disturbance Comments:** There is little impact from any other source but grazing, however, spraying of sagebrush has been practiced widely as a treatment with the consequence of increasing brome species significantly. The Colstrip area has been excluded from this polygon, but the potential for coal extraction exists widely in this polygon. Agriculture (hay fields) is mostly confined to major drainages. Overall this landscape is remarkably intact.

**Cropland Conversion Rating: 2**

**Preliminary Conservation Significance Rating: 1**

**Survey Intensity Comments:** Given the large size of polygon it was considerably undersampled. The forested portions especially received inadequate treatment. Much of the landscape is repetition of basic patterns, which were well captured.

**Outstanding Sites:** None were located at this low intensity level of sampling.

## REA Summary Form

**Polygon Number:** 103 (ND)

**Polygon Description:**

This polygon includes the Little Missouri Badlands, an area of deeply dissected valleys, steep barren highly erodible badlands, and rolling upland prairie. At the lowest elevations, the Little Missouri River has *Populus deltoides* and *Fraxinus pennsylvanica* floodplain forests. Along the badlands valleys, shrublands such as *Artemisia cana* and *Shepherdia argentea* are found. Upland woodlands include *Juniperus scopulorum* and *Fraxinus pennsylvanica*. The upland prairie types are dominated by *Pascopyrum smithii* and *Stipa comata* types.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic spp</u>	<u>Rating</u>
Pascopyrum smithii-Nasella viridula	M		
Schizachyrium scoparium-Bouteloua spp./Carex filifolia	LP		
Stipa comata-Bouteloua gracilis-Carex filifolia	LP		
Symphoricarpos occidentalis	LP		
Calamovilfa longifolia-Carex filifolia	SP		
Artemisia tridentata/Pascopyron smithii	SP		
Shepherdia argentea	SP		
Fraxinus pennsylvanica/Prunus virginiana woodland	LP		
Juniperus scopulorum/Oryzopsis micrantha	SP		
Andropogon gerardii-Schizachyrium scoparium western hillslope	SP		
Rhus aromatica	SP		
Juniperus horizontalis/Schizachyrium scoparium	SP		
Prunus virginiana	SP		
Pascopyrum smithii-Distichlis spicata	SP		
Spartina pectinata-Scirpus pungens	SP		
Sarcobatus vermiculatus/Pascopyron smithii	SP		
Populus deltoides(Salix amygdaloides)/Salix exigua	LP		
Populus deltoides-Fraxinus pennsylvanica	LP		
Populus tremuloides/Prunus virginiana	SP		
Pinus ponderosa/Prunus virginiana	LP		
Pinus ponderosa/Pseudoroegneria spicata	LP		
Atriplex confertifolia/Artemisia tridentata	SP		
Distichlis spicata-Hordeum jubatum-Sporobolus airoides	SP		
Potentilla fruticosa/Schizachyrium scoparium	SP		

**Polygon Natural Community Classification:**

**Primary:** Pascopyrum smithii-Nasella viridula  
**Secondary:** Stipa comata-Bouteloua gracilis-Carex filifolia

**Ownership Classification:** 1

**Exotic Comments:** Exotics are primarily introduced grasses, *Bromus inermis*, *B. japonicus*, *Agropyron cristatum*, and *Poa pratensis*, which occur in moderate amounts in upland herbaceous communities. *Euphorbia esula* occurs infrequently.

**Land-use Disturbance Rating:** 2

**Land-use Disturbance Comments:** Land-use disturbance includes oil and gas wells and cropland conversion.

**Cropland Conversion Rating: 2**

**Preliminary Conservation Significance Rating: 2; one of the largest intact areas in ND**

**Survey Intensity Comments:** Incomplete field coverage, however an abundance of information exists from US Forest Service.

**Outstanding Sites:** None noted.

## REA Summary Form

**Polygon Number:** 104 (MT)

**Polygon Description:** Eastern side of Powder River valley, made up of rolling terrain, shale valley slopes, sandstone ridges, buttes and washes along the Powder River and major tributaries. *Pascopyrum smithii* is most consistently the dominant on shale-derived soil, and *Stipa comata-Carex filifolia* on coarser soils.

### Polygon Natural Communities Summary:

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii	M, LP, SP	Brte	
Stipa comata-Carex filifolia	M		
Artemisia cana/Pascopyrum smithii	LP	Brte	
Artemisia tridentata/Pascopyrum smithii	LP		
Atriplex suckleyi	LP		
Sarcobatus vermiculatus/Pascopyrum smithii	SP		
Artemisia longifolia/Pascopyrum smithii	SP		
Artemisia tridentata/Elymus lanceolatus	SP		
Fraxinus pennsylvanica/Symphoricarpos occidentalis	SP		
Juniperus scopulorum/Oryzopsis micrantha	SP		
Populus deltoides	SP		
Puccinellia nuttallii	SP		
Rhus trilobata/Pseudoregneria spicata	SP		
Salix exigua	SP		
Symphoricarpos occidentalis	SP		

### Polygon Natural Community Classification:

**Primary:** *Pascopyrum smithii*  
**Secondary:** *Stipa comata-Carex filifolia*

**Ownership Classification:** 3

**Exotic Comments:** *Bromus tectorum* is a widespread problem over a range of soil types; most severe in communities with *Pascopyrum smithii* dominance/co-dominance.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:**

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 2

**Survey Intensity Comments:** Survey focused on public lands, in addition to running road log notes on private lands.

**Outstanding Sites:** Chalk Buttes was not visited in this survey and is presumed to have additional pine and possibly additional grassland types.

## REA Summary Form

**Polygon Number:** 105 (ND)

**Polygon Description:**

This polygon includes nearly level outwash plains with coarse textured, well drained soils, as well as, gently rolling to moderately steep moraine hills with both fine-and coarse-textured soils. The level outwash plains have several large, relatively shallow alkali lakes and wetlands while the rolling moraine has high densities of fresh to brackish wetlands ranging from temporary to semi-permanent. The vegetation is primarily *Pascopyrum-Stipa* with significant amounts of the *Schizacharium scoparium* type, which increases in cover on the eastern side of the polygon.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic spp</u>	<u>Rating</u>
Pascopyrum smithii-Stipa comata	M		
Schizachyrium scoparium-Bouteloua curtipendula-Stipa spartea	LP		
Symphoricarpos occidentalis	SP		
Eleagnus commutata	SP		
Andropogon gerardii-Schizachyrium scoparium-Panicum virgatum	SP		
Carex atherodes seasonally flooded	SP		
Typha spp. semipermanently flooded	SP		
Spartina pectinata-Calamagrostis stricta-Carex spp.	SP		
Andropogon gerardii-Schizachyrium scoparium western hillslope	SP		
Potamogeton spp.-Ceratophyllum demersum	SP		
Potamogeton pectinatus-Ruppia maritima	SP		
Calamovilfa longifolia-Carex filifolia	SP		
Shepherdia argentea	SP		
Prunus virginiana	SP		
Populus deltoides/Salix exigua	SP		
Fraxinus pennsylvanica/Prunus virginiana woodland	SP		

**Polygon Natural Community Classification:**

**Primary:** Pascopyrum smithii-Stipa comata

**Secondary:** Schizachyrium scoparium-Bouteloua curtipendula-Stipa spartea

**Ownership Classification:** 4

**Exotic Comments:** Exotics are primarily introduced grasses, *Bromus inermis*, *Agropyron cristatum*, and *Poa pratensis*, which occur abundantly in upland herbaceous communities.

**Land-use Disturbance Rating:** 3

**Land-use Disturbance Comments:** Disturbance is primarily cropland conversion.

**Cropland Conversion Rating:** 1

**Preliminary Conservation Significance Rating:** 2

**Survey Intensity Comments:** Good coverage.

**Outstanding Sites:** T138 R69 Section 8 and vicinity; T138 R70 Section 27.

## REA Summary Form

**Polygon Number:** 106 (MT)

**Polygon Description:** Gently rolling plains with widely-scattered escarpments. *Pascopyrum smithii* dominates in flats, benches and even uplands, with the highest points dominated by *Stipa comata-Carex filifolia*. In lower positions, *Artemisia tridentata/Pascopyrum smithii* is generally found as a small to large patch but occasionally as matrix. Most of the other upland types are part of erosion complexes varying with slope, aspect and substrate. Pine types are in the northwestern corner. Wetland vegetation occur in riparian corridors.

### Polygon Natural Communities Summary:

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii	M		
Stipa comata-Carex filifolia	M		
Artemisia cana/Pascopyrum smithii	LP		
Artemisia tridentata/Pascopyrum smithii	LP		
Atriplex confertifolia	SP		
Carex praegracilis	SP		
Eleocharis palustris	SP		
Fraxinus pennsylvanica/Symphoricarpos occidentalis	SP		
Pinus ponderosa/Juniperus horizontalis	SP		
Pinus ponderosa/Pseudoregneria spicata	SP		
Populus deltoides			
Pseudoregneria spicata	SP		
Rhus trilobata	SP		
Schizachyrium scoparium	SP		
Scirpus pungens	SP		

### Polygon Natural Community Classification:

**Primary:** *Pascopyrum smithii*  
**Secondary:** *Stipa comata-Carex filifolia*

**Ownership Classification:** 4

**Exotic Comments:** *Bromus tectorum* is a problem across much of the landscape, particularly on heavier soil. Seeding of *Agropyron cristatum* into native range is widespread.

**Land-use Rating:** 1

**Land-use Disturbance Comments:**

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 2

**Survey Intensity Comments:** Survey focused on public lands, in addition to running road log notes on private lands.

**Outstanding Sites:** None identified.

## REA Summary Form

**Polygon Number:** 107 (ND)

### **Polygon Description:**

This polygon includes the bluffs and breaks of the Missouri River. It is characterized by numerous watersheds with moderately to steeply sloping ravines and coulees with gently rolling uplands above. The dominant vegetation of the uplands includes the grass types: *Pascopyrum smithii*-*Nasella viridula* with *Schizachyrium scoparium*-*Bouteloua spp./Carex filifolia* and *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia*. The east and north-facing bluffs of the Missouri River are heavily wooded with *Quercus macrocarpa*/*Prunus virginiana* and *Fraxinus pennsylvanica*/*Prunus virginiana* types. Shrub thickets, including *Shepherdia argentea* and *Symphoricarpos occidentalis*, are scattered throughout on gentle and steep slopes.

### **Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic spp</u>	<u>Rating</u>
<i>Pascopyrum smithii</i> - <i>Nasella viridula</i>	M		
<i>Schizachyrium scoparium</i> - <i>Bouteloua spp./Carex filifolia</i>	LP		
<i>Stipa comata</i> - <i>Bouteloua gracilis</i> - <i>Carex filifolia</i>	LP		
<i>Symphoricarpos occidentalis</i>	LP		
<i>Calamovilfa longifolia</i> - <i>Carex filifolia</i>	SP		
<i>Andropogon gerardii</i> - <i>Schizachyrium scoparium</i> western hillslope	SP		
<i>Pascopyrum smithii</i> - <i>Bouteloua gracilis</i>	LP		
<i>Shepherdia argentea</i>	SP		
<i>Fraxinus pennsylvanica</i> / <i>Prunus virginiana</i> woodland	LP		
<i>Fraxinus pennsylvanica</i> / <i>Ulmus americana</i> - <i>Acer negundo</i>	LP		
<i>Quercus macrocarpa</i> / <i>Prunus virginiana</i>	SP		
<i>Populus deltoides</i> / <i>Fraxinus pennsylvanica</i>	SP		
<i>Prunus virginiana</i>	SP		
<i>Juniperus horizontalis</i>	SP		
<i>Artemisia cana</i> / <i>Pascopyrum smithii</i>	SP		
<i>Rhus aromatica</i>	SP		
<i>Spartina pectinata</i> - <i>Scirpus pungens</i>	SP		
Barren badlands slope	SP		
<i>Prunus americana</i>	SP		
<i>Amelanchier alnifolia</i>	SP		
( <i>Prunus pumila</i> )	SP		

### **Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Nasella viridula*

**Secondary:** *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* and *Schizachyrium scoparium*-*Bouteloua spp./Carex filifolia*

**Ownership Classification:** 4

**Exotic Comments:** Exotics are primarily introduced grasses, *Bromus inermis*, *B. japonicus*, *Agropyron cristatum*, and *Poa pratensis*, which occur in moderate amounts in upland herbaceous communities. *Euphorbia esula* occurs infrequently.

**Land-use Disturbance Rating:** 3

**Land-use Disturbance Comments:** Land-use disturbance is primarily cropland conversion.

**Cropland Conversion Rating: 2**

**Preliminary Conservation Significance Rating: 2**

**Survey Intensity Comments:** Good coverage.

**Outstanding Sites:** None noted.

## REA Summary Form

**Polygon Number:** 108 (ND)

### **Polygon Description:**

This polygon is found on the bottoms of the Missouri River and is primarily made up of the upper reaches of Oahe Reservoir with the water levels controlled through dam releases. Some portions of the site also have created or managed wetlands with control structures regulating palustrine wetland water levels. There are some areas of native woodlands with *Populus deltoides* types on more recently flooded areas, and *Fraxinus pennsylvanica-Ulmus americana-Acer negundo* types on less recently flooded areas. The steep, mostly south- and west-facing bluffs have a mixture of grassland and shrubland types.

### **Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic spp</u>	<u>Rating</u>
Populus deltoides-Fraxinus pennsylvanica	LP		
Fraxinus pennsylvanica-Ulmus americana-Acer negundo	LP		
Populus deltoides/Salix exigua	LP		
Symphoricarpos occidentalis	SP		
Calamovilfa longifolia-Carex filifolia	SP		
Shepherdia argentea	SP		
Quercus macrocarpa/Prunus virginiana woodland	SP		
Prunus virginiana	SP		
Pascopyrum smithii-Bouteloua gracilis	LP		
Spartina pectinata-Calamagrostis stricta-Carex spp.	SP		
Artemisia cana/Pascopyrum smithii	SP		

### **Polygon Natural Community Classification:**

**Primary:** Populus deltoides-Fraxinus pennsylvanica

**Secondary:** Fraxinus pennsylvanica-Ulmus americana-Acer negundo

**Ownership Classification:** 1

**Exotic Comments:** *Euphorbia esula* is scattered throughout the polygon. Other exotics include *Bromus inermis*, *Poa pratensis*, and *Cirsium arvense*, which are abundant.

**Land-use Disturbance Rating:** 3

**Land-use Disturbance Comments:** Land-use disturbance includes cropland conversion and hydrologic manipulation or regulation.

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 3

**Survey Intensity Comments:** Good coverage.

**Outstanding Sites:** None noted.

## REA Summary Form

**Polygon Number:** 110 (ND)

### **Polygon Description:**

This polygon includes the Cannonball River and associated drainages and extends east to the Oahe Reservoir on the Missouri River. This area has moderately to steeply dissected breaks near the rivers and streams with broad rolling uplands between watersheds. Upland vegetation primarily includes *Pascopyrum smithii* types with large areas of *Schizachyrium scoparium* and *Stipa comata* associations. Woodlands are restricted to riparian areas and steep ravines. Eroded barren exposures are found along the river valley slopes.

### **Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic spp</u>	<u>Rating</u>
Pascopyrum smithii-Bouteloua gracilis/Carex filifolia	M		
Schizachyrium scoparium-Bouteloua spp./Carex filifolia	LP		
Stipa comata-Bouteloua gracilis-Carex filifolia	LP		
Pascopyrum smithii-Nasella viridula	LP		
Fraxinus pennsylvanica-Ulmus americana-Acer negundo Forest	LP		
Symphoricarpos occidentalis	SP		
Quercus macrocarpa/Prunus virginiana Woodland	SP		
Shepherdia argentea	SP		
Artemisia cana/Pascopyrum smithii	SP		
Calamovilfa longifolia-Carex filifolia	SP		
Juniperus horizontalis	SP		
Barren eroding badlands slopes	SP		
Andropogon gerardi-Schizachyrium scoparium (Western Great Plains)	SP		
Prunus virginiana	SP		
Puccinella nutallii	SP		
Spartina pectinata-Scirpus pungens	SP		

### **Polygon Natural Community Classification:**

**Primary:** Pascopyrum smithii-Nasella viridula

**Secondary:** Schizachyrium scoparium-Bouteloua spp./Carex filifolia and Stipa comata-Bouteloua gracilis-Carex filifolia

**Ownership Classification:** 4

**Exotic Comments:** Exotics are introduced grasses, *Bromus inermis*, *B. japonicus*, and *Agropyron cristatum*, which occur in moderate amounts in upland herbaceous communities. *Euphorbia esula* occurs infrequently, especially along the reservoir and to the northern portion of the polygon.

**Land-use Disturbance Rating:** 3

**Land-use Disturbance Comments:** Disturbance is primarily agricultural conversion.

**Cropland Conversion Rating:** 1

**Preliminary Conservation Significance Rating:** 2

**Survey Intensity Comments:** Good coverage of the polygon.

**Outstanding Sites:** None noted.

## REA Summary Form

**Polygon Number:** 112 (ND)

**Polygon Description:**

This polygon is found on the Missouri Coteau and also extends off the western edge of the Coteau into the Beaver Creek watershed. The Coteau portion is characterized by undulating to rolling topography with numerous wetlands interspersed among the hills. The Beaver Creek watershed has moderately steep ravines and draws which drain west to the Missouri River. The vegetation is primarily *Pascopyrum smithii*-*Stipa comata* and *Schizachyrium scoparium*-*Bouteloua curtipendula*-*Stipa spartea* grassland types. There are numerous wetlands which range from small temporary basins to large permanent lakes. There are few shrubs aside from relatively extensive patches of *Symphoricarpos occidentalis*.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic spp</u>	<u>Rating</u>
<i>Pascopyrum smithii</i> - <i>Stipa comata</i>	M		
<i>Schizachyrium scoparium</i> - <i>Bouteloua curtipendula</i> - <i>Stipa spartea</i>	LP		
<i>Stipa comata</i> - <i>Bouteloua gracilis</i> - <i>Carex filifolia</i>	LP		
<i>Symphoricarpos occidentalis</i>	LP		
<i>Andropogon gerardii</i> - <i>Schizachyrium scoparium</i> - <i>Panicum virgatum</i>	SP		
<i>Spartina pectinata</i> - <i>Calamagrostis stricta</i> - <i>Carex</i> spp.	SP		
<i>Typha</i> spp. semipermanently flooded	SP		
<i>Scirpus acutus</i> - <i>Scirpus maritimus</i> semipermanently flooded	SP		
<i>Scolochloa festucacea</i>	SP		
<i>Carex atherodes</i> seasonally flooded	SP		
<i>Fraxinus pennsylvanica</i> / <i>Prunus virginiana</i> woodland	SP		
<i>Potamogeton pectinatus</i> - <i>Ruppia maritimus</i>	SP		
<i>Hordeum jubatum</i>	SP		
<i>Calamagrostis stricta</i> - <i>Carex sartwellii</i> - <i>Carex praegracilis</i>	SP		
<i>Populus deltoides</i> / <i>Salix exigua</i>	SP		
<i>Prunus virginiana</i>	SP		

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Stipa comata*

**Secondary:** *Schizachyrium scoparium*-*Bouteloua curtipendula*-*Stipa spartea*.

**Ownership Classification:** 4

**Exotic Comments:** Exotics are primarily introduced grasses, *Bromus inermis* and *Poa pratensis*, which occur abundantly in upland herbaceous communities. *Euphorbia esula* occurs infrequently.

**Land-use Disturbance Rating:** 3

**Land-use Disturbance Comments:** Land-use disturbance is primarily cropland conversion.

**Cropland Conversion Rating:** 1

**Preliminary Conservation Significance Rating:** 2-3

**Survey Intensity Comments:** Good coverage.

**Outstanding Sites:** T135R71 Section 10.

## REA Summary Form

**Polygon Number:** 113 (MT)

**Polygon Description:**

Polygon 113 is somewhat naturally defined, consisting predominantly of deeply incised, moderate to steep-sided dendritic drainages that dissect what was a mostly level planar surface; the eastern edge of which is a slightly higher steep escarpment known as Pine Ridge. The 700 to 800 foot vertical relief from surrounding plains to upper benches is significant. Soil textures are predominantly sandy loams to silt loams. The polygon's eastern boundary is roughly the Bighorn River, whereas, the northern boundary is the Yellowstone River. Arable lands are located adjacent to the river and extend to the escarpment. About half of the polygon is *Pinus ponderosa*-dominated forest and half is *Artemisia tridentata* var. *wyomingensis* and *Pascopyrum smithii*-dominated steppe. The most common steppe communities are *P. smithii* - *Pseudoroegneria spicata* and *A. tridentata* var. *wyomingensis*/*P. smithii*-*Nasella viridula*. No single *P. ponderosa* community type can be said to dominate because there are so many continuously varying combinations of slope and aspect to which the undergrowth species respond. Extensively developed *Rhus aromatica*/*Pseudoroegneria spicata* occupies the steep and generally sandy slope shoulders. Because of its inaccessibility, this is a relatively intact landscape with few threats. Virtually all of its forested land received a first cutting at the time of settlement (proximal to Hardin), and selective logging (high-grading) has been occurring. Whole stand harvests were also noted. The steppe communities are intensively cattle-grazed for the most part.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Pascopyrum smithii</i> - <i>Pseudoroegneria spicata</i>	LP	Btre, Meof	2-3
<i>Pascopyrum smithii</i> - <i>Nasella viridula</i>	M	Brte	2
<i>Artemisia tridentata</i> var. <i>wyomingensis</i> / <i>Pascopyrum smithii</i> - <i>Pseudoroegneria spicata</i>	M	Brte, Meof	3
<i>A. tridentata</i> var. <i>wyomingensis</i> / <i>P. smithii</i> - <i>N. viridula</i>	LP	Brte	3
<i>Artemisia cana</i> / <i>Pascopyrum smithii</i>	SP	Brte	2
<i>Rhus aromatica</i> / <i>Pseudoroegneria spicata</i>	SP	Brte	1
<i>Pinus ponderosa</i> / <i>Pseudoroegneria spicata</i>	LP	Brte	1
<i>Pinus ponderosa</i> / <i>Symphoricarpos occidentalis</i>	LP	Brte	2
<i>P. ponderosa</i> / <i>Festuca idahoensis</i>	SP-LP	Brte	2
<i>P. ponderosa</i> / <i>Prunus virginiana</i>	SP	Brte	1
<i>P. ponderosa</i> / <i>Carex inops</i> var. <i>heliophila</i>	LP	Brte	1

**Polygon Natural Community Classification:**

**Primary:** *Artemisia tridentata* ssp. *wyomingensis*/*Pascopyrum smithii*

**Secondary:** *Pinus ponderosa*/*Symphoricarpos occidentalis*

**Ownership Classification:** 4

**Exotic Comments:** *Bromus tectorum* (or *B. japonicus*) has expanded to virtually every environment, even present in minor amounts on the most shaded of forest environments (*P. ponderosa*/*Prunus virginiana*)

**Land-use Disturbance Rating:** 2

**Land-use Disturbance Comments:** With price of timber escalating even the relatively unproductive, limited access forest types present on the upper flats will be subject to heavy cutting. The high grazing intensity may be responsible for the annual brome infestations.

**Cropland Conversion Rating: 3**

**Preliminary Conservation Significance Rating: 2**

**Survey Intensity Comments:** Though few sampling points were established, the landscape was rather predictable as to what communities would be found and where. Most of the sampling was conducted in the more accessible southeastern half of the polygon.

**Outstanding Sites:** No outstanding sites were located, but extensive examples of some common types recommend this polygon for further inventory. Possibly the northwestern portion has been less impacted by grazing and consequently has less of an exotics invasion.

## REA Summary Form

**Polygon Number:** 115 (ND)

**Polygon Description:**

This polygon encompasses a series of river breaks and watersheds which drain into the Missouri River. The area is characterized by broad and moderately hilly and rolling valleys with gently rolling uplands. The area shows some evidence of glaciation with scattered rocks and boulders. There are a few trees and shrubs along the watercourses, primarily *Fraxinus pennsylvanica* types. The uplands are predominantly grass-covered with very few shrubs, aside from stands of *Symphoricarpos occidentalis*. The upland vegetation is mostly *Pascopyrum smithii*-*Nasella viridula* with *Stipa comata*-*Carex filifolia* type.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic spp</u>	<u>Rating</u>
Pascopyrum smithii-Nasella viridula	M		
Stipa comata-Bouteloua gracilis-Carex filifolia	LP		
Schizachyrium scoparium-Bouteloua spp./Carex filifolia	LP		
Symphoricarpos occidentalis	LP		
Fraxinus pennsylvanica/Prunus virginiana woodland	LP		
Calamovilfa longifolia-Carex filifolia	SP		
Pascopyrum smithii-Bouteloua gracilis	LP		
Shepherdia argentea	SP		
Quercus macrocarpa/Prunus virginiana	SP		
Juniperus horizontalis	SP		
Artemisia cana/Pascopyrum smithii	SP		
Andropogon gerardii-Schizachyrium scoparium western hillslope	SP		
Pascopyron smithii-Distichlis stricta	SP		
Spartina pectinata-Scirpus pungens	SP		
Amelanchier alnifolia	SP		
Prunus virginiana	SP		

**Polygon Natural Community Classification:**

**Primary:** Pascopyrum smithii-Nasella viridula

**Secondary:** Stipa comata-Bouteloua gracilis-Carex filifolia

**Ownership Classification:** 4

**Exotic Comments:** Exotics are primarily introduced grasses, *Agropyron cristatum* and *Bromus inermis*, which occur in moderate amounts..

**Land-use Disturbance Rating:** 3

**Land-use Disturbance Comments:** Land-use disturbance is primarily cropland conversion.

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 3

**Survey Intensity Comments:** Good coverage.

**Outstanding Sites:** None noted

## REA Summary Form

**Polygon Number:** 116 (ND)

**Polygon Description:**

This polygon is centered around an area of terminal moraine which forms a large plateau-like landform. It has steep slopes along its edges with broad flats areas below and undulating to rolling topography above. The vegetation is primarily mixed grass prairie with *Pascopyrum smithii*-*Stipa comata* and *Schizachyrium scoparium*-*Bouteloua curtipendula* types. It has extensive stands of *Symphoricarpos occidentalis* and the steepest north-facing slopes are wooded with *Quercus macrocarpa*/*Prunus virginiana*. Wetlands are interspersed throughout, with smaller basins on the upper rolling topography and large brackish basins and lakes on the broad level areas below the moraine feature.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic spp</u>	<u>Rating</u>
Pascopyrum smithii-Stipa comata	M		
Schizachyrium scoparium-Bouteloua curtipendula-Stipa spartea	LP		
Stipa comata-Bouteloua gracilis-Carex filifolia	LP		
Symphoricarpos occidentalis	LP		
Andropogon gerardii-Schizachyrium scoparium-Panicum virgatum	SP		
Spartina pectinata-Calamagrostis stricta-Carex spp.	SP		
Typha spp. semipermanently flooded	SP		
Scirpus acutus-Scirpus maritimus semipermanently flooded	SP		
Scirpus spp.-Typha spp. semipermanently flooded	SP		
Carex atherodes seasonally flooded	SP		
Quercus macrocarpa/Prunus virginiana woodland	SP		
Potamogeton spp-Ceratophyllum demersum	SP		
Calmovilfa longifolia-Carex filifolia	SP		
Prunus virginiana	SP		

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Stipa comata*

**Secondary:** *Schizachyrium scoparium*-*Bouteloua curtipendula*-*Stipa spartea*.

**Ownership Classification:** 4

**Exotic Comments:** Exotics are primarily introduced grasses, *Agropyron repens*, *Poa pratensis*, and *Bromus inermis*, which occur abundantly in the polygon.

**Land-use Disturbance Rating:** 3

**Land-use Disturbance Comments:** Land-use disturbance is primarily cropland conversion.

**Cropland Conversion Rating:** 1

**Preliminary Conservation Significance Rating:** 2-3

**Survey Intensity Comments:** Good coverage.

**Outstanding Sites:** T135R68 Section 19.

**REA Summary Form**

**Polygon Number:** 121 (ND)

**Polygon Description:**

This polygon has rolling to hilly uplands with numerous dissected ravines and coulees which are part of the Cannonball and Missouri River watersheds. The area is bordered by the Missouri River-Oahe Reservoir on the east and the Cannonball River on the north. The vegetation is primarily *Pascopyrum smithii*-*Nasella viridula* with *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia*. On the slopes above the river valleys there are moderate amounts of woodland and shrubland cover. *Shepherdia argentea* and *Symphoricarpos occidentalis* are the primary shrubs, with *Quercus macrocarpa* and *Fraxinus pennsylvanica* being the predominant tree species.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic spp</u>	<u>Rating</u>
Pascopyrum smithii-Nasella viridula	M		
Schizachyrium scoparium-Bouteloua spp./Carex filifolia	LP		
Stipa comata-Bouteloua gracilis-Carex filifolia	LP		
Symphoricarpos occidentalis	LP		
Calamovilfa longifolia-Carex filifolia	SP		
Pascopyrum smithii-Bouteloua gracilis	LP		
Andropogon gerardii-Schizachyrium scoparium western hillslope	SP		
Shepherdia argentea	SP		
Fraxinus pennsylvanica/Ulmus americana-Acer negundo	LP		
Quercus macrocarpa/Prunus virginiana	SP		
Fraxinus pennsylvanica/Prunus virginiana woodland	LP		
Juniperus scopulorum/Oryzopsis micrantha	SP		
Barren badlands slope	SP		
Populus deltoides/Salix exigua	LP		
Artemisia cana/Pascopyrum smithii	SP		
Spartina pectinata-Scirpus pungens	SP		
Crateagus chrysocarpa	SP		
Rhus aromatica	SP		
Prunus virginiana	SP		

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Nasella viridula*

**Secondary:** *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia*

**Ownership Classification:** 2

**Exotic Comments:** Exotics are primarily introduced grasses, *Bromus inermis*, *B. japonicus*, *Agropyron cristatum*, and *Poa pratensis*, which occur in moderate amounts in upland herbaceous communities. *Euphorbia esula* occurs infrequently.

**Land-use Disturbance Rating:** 2

**Land-use Disturbance Comments:** Land-use disturbance is primarily cropland conversion.

**Cropland Conversion Rating:** 1

**Preliminary Conservation Significance Rating:** 2

**Survey Intensity Comments:** Good coverage.

## REA Summary Form

**Polygon Number:** 123 (ND)

### **Polygon Description:**

This polygon is found along the western edge of the Missouri Coteau and extends west along Beaver Creek. It includes an area of rolling-steep terminal moraine with some relatively level areas of glacial outwash. The western portion along Beaver Creek has a series of valleys and draws which contain intermittent drainages flowing west toward the Missouri River. Wetlands are numerous on the Coteau and range from small temporary basins to large permanent lakes. Vegetation is primarily *Pascopyrum smithii*-*Stipa comata* and *Schizachyrium scoparium*-*Bouteloua curtipendula*-*Stipa spartea*.

### **Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic spp</u>	<u>Rating</u>
Pascopyron smithii-Stipa comata	M		
Schizachyrium scoparium-Bouteloua curtipendula-Stipa spartea	LP		
Stipa comata-Bouteloua gracilis-Carex filifolia	LP		
Symphoricarpos occidentalis	SP		
Andropogon gerardii-Schizachyrium scoparium western hillslope	SP		
Spartina pectinata-Calamagrostis stricta-Carex spp.	SP		
Carex atherodes seasonally flooded	SP		
Calamovilfa longifolia-Carex filifolia	SP		
Andropogon gerardii-Schizachyrium scoparium-Panicum virgatum	SP		
Typha spp. semipermanently flooded	SP		
Scirpus spp.-Typha spp. semipermanently flooded	SP		
Fraxinus pennsylvanica/Prunus virginiana woodland	LP		
Shepherdia argentea	SP		
Crataegus chrysoarpa	SP		
Prunus virginiana	SP		

### **Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Stipa comata*

**Secondary:** *Schizachyrium scoparium*-*Bouteloua curtipendula*

**Ownership Classification:** 4

**Exotic Comments:** Exotics are primarily introduced grasses, *Bromus inermis*, *Agropyron cristatum*, and *Poa pratensis*, which occur abundantly in upland herbaceous communities.

**Land-use Disturbance Rating:** 3

**Land-use Disturbance Comments:** Land use disturbance is primarily cropland conversion.

**Cropland Conversion Rating:** 1

**Preliminary Conservation Significance Rating:** 2

**Survey Intensity Comments:** Good coverage

**Outstanding Sites:** None noted.

**REA Summary Form**

**Polygon Number:** 127 (ND)

**Polygon Description:**

This polygon includes areas of rolling uplands with gentle topography, along with dissected ravines, steep buttes, and broad flat floodplains along Porcupine Creek. Substrates range from heavy clays to light sands. Vegetation is primarily *Pascopyrum smithii*-*Nasella viridula* with *Stipa comata*-*Bouteloua gracilis*. The steeper slopes of the polygon have wooded cover with *Fraxinus pennsylvanica* and *Quercus macrocarpa*, while the floodplains contain *Populus deltoides* types.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic spp</u>	<u>Rating</u>
Pascopyrum smithii-Nasella viridula	M		
Schizachyrium scoparium-Bouteloua spp./Carex filifolia	LP		
Stipa comata-Bouteloua gracilis-Carex filifolia	LP		
Symphoricarpos occidentalis	LP		
Calamovilfa longifolia-Carex filifolia	SP		
Fraxinus pennsylvanica/Prunus virginiana woodland	LP		
Andropogon gerardii-Schizachyrium scoparium western hillslope	SP		
Shepherdia argentea	SP		
Populus deltoides/Fraxinus pennsylvanica	LP		
Quercus macrocarpa/Prunus virginiana	SP		
Juniperus scopulorum/Oryzopsis micrantha	SP		
Artemisia cana/Pascopyrum smithii	SP		
Spartina pectinata-Scirpus pungens	SP		
Rhus aromatica	SP		
Prunus virginiana	SP		
Populus tremuloides/Prunus virginiana	SP		
Barren badlands slope	SP		
Prunus americana	SP		

**Polygon Natural Community Classification:**

- **Primary:** *Pascopyrum smithii*-*Nasella viridula*
- **Secondary:** *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia*

**Ownership Classification:** 2

**Exotic Comments:** Exotics are primarily introduced grasses, *Bromus inermis*, *B. japonicus*, *Agropyron cristatum*, and *Poa pratensis*, which occur in moderate amounts in upland herbaceous communities. *Euphorbia esula* occurs infrequently.

**Land-use Disturbance Rating:** 2

**Land-use Disturbance Comments:** Land-use disturbance is primarily cropland conversion.

**Cropland Conversion Rating:** 1

**Preliminary Conservation Significance Rating:** 1; one of largest intact landscapes outside of Little Missouri Badlands.

**Survey Intensity Comments:** Good coverage.

**Outstanding Sites:** None noted.

## REA Summary Form

**Polygon Number:** 130 (ND)

**Polygon Description:**

This polygon includes moderate to steeply sloping hills and rolling uplands dissected by ravines which are part of the Cannonball River watershed. The lower breaks and slopes are frequently barren clay with sparse vegetation. The river valley has a broad flat floodplain with *Fraxinus pennsylvanica-Ulmus americana* forests bordering the river. The uplands are primarily *Pascopyrum smithii-Nasella viridula* with *Stipa comata-Carex filifolia* and *Schizachyrium scoparium* types.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic spp</u>	<u>Rating</u>
Pascopyrum smithii-Nasella viridula	M		
Schizachyrium scoparium-Bouteloua spp./Carex filifolia	LP		
Stipa comata-Bouteloua gracilis-Carex filifolia	LP		
Symphoricarpos occidentalis	LP		
Fraxinus pennsylvanica/Prunus virginiana woodland	LP		
Calamovilfa longifolia-Carex filifolia	SP		
Andropogon gerardii-Schizachyrium scoparium western hillslope	SP		
Shepherdia argentea	SP		
Fraxinus pennsylvanica/Ulmus americana-Acer negundo	LP		
Quercus macrocarpa/Prunus virginiana	SP		
Juniperus scopulorum/Oryzopsis micrantha	SP		
Artemisia cana/Pascopyrum smithii	SP		
Spartina pectinata-Scirpus pungens	SP		
Amelanchier alnifolia	SP		
Prunus virginiana	SP		

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii-Nasella viridula*

**Secondary:** *Stipa comata-Bouteloua gracilis-Carex filifolia*

**Ownership Classification:** 2

**Exotic Comments:** Exotics are primarily introduced grasses, *Bromus inermis*, *B. japonicus*, and *Agropyron cristatum*, which occur infrequently in upland herbaceous communities.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** Land-use disturbance is primarily cropland conversion.

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 1-2

**Survey Intensity Comments:** Good coverage.

**Outstanding Sites:** T131R83 Sec 19.

**REA Summary Form**

**Polygon Number:** 132 (MT)

**Polygon Description:**

Polygon 132 encompasses most of the Northern Cheyenne and Crow Indian Reservations. Parent materials are almost exclusively non-calcareous sedimentary formations (sandstones predominate) and Quaternary surficial deposits. It is about equally divided between *Pinus ponderosa*-dominated forest/woodland and *Artemisia tridentata* ssp. *wyomingensis*- and *Pascopyrum smithii*-dominated steppe. The higher elevations (3,500 ft plus) on the Northern Cheyenne Reservation (NCR) constitute a core area where *P. ponderosa* communities blanket the landscape, except for meadow openings and steep south slopes. The most common types are *P. ponderosa*/*Carex inops* var. *heliophila* and *P. ponderosa*/*Symphoricarpos occidentalis* (or *S. albus*). Woody draws also occur in abundance on the NCR, though conditions are degraded by cattle overgrazing. In recent years, very extensive, outside the range of natural variation, wildfires have burned large tracts of timber on the reservation and surrounding National Forest/BLM lands, putting heavy pressure on remaining stands to supply timber needs. In bottomlands, *Sarcobatus vermiculatus*, in combination with various undergrowth species, comprises extensive dominant vegetation types. Most of the uplands appeared capable of supporting *Artemisia tridentata* ssp. *wyomingensis* as the dominant shrub, but fire and spraying programs have curtailed its importance. *Pascopyrum smithii*, *Stipa comata*, *Pseudoroegneria spicata* and *Festuca idahoensis* constitute dominant components of both grass and shrub steppe community types and extend under forest canopies to define, as indicator species, particular forest vegetation types as well.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Stipa comata</i> - <i>Bouteloua gracilis</i>	M		
<i>Pascopyrum smithii</i> - <i>Stipa comata</i>	M		
<i>Pseudoroegneria spicata</i> - <i>Bouteloua curtipendula</i>	SP		
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i> / <i>P. smithii</i>	M		
<i>A. tridentata</i> ssp. <i>wyomingensis</i> / <i>P. spicata</i>	SP		
<i>A. tridentata</i> ssp. <i>tridentata</i> / <i>P. smithii</i>	LP		
<i>Rhus trilobata</i> / <i>Pseudoroegneria spicata</i>	SP		
<i>R. trilobata</i> / <i>Carex filifolia</i>	SP		
<i>A. tridentata</i> var. <i>wyomingensis</i> - <i>Atriplex confertifolia</i>	SP		
<i>Sarcobatus vermiculatus</i> / <i>P. smithii</i>	LP	Brja,Brte	3
<i>Sarcobatus vermiculatus</i> - <i>A. tridentata</i> ssp. <i>tridentata</i>	SP		
<i>Artemisia cana</i> / <i>P. smithii</i>	LP		
<i>Pinus ponderosa</i> / <i>P. spicata</i>	LP		
<i>P. ponderosa</i> / <i>Festuca idahoensis</i>	LP		
<i>P. ponderosa</i> / <i>Carex inops</i> var. <i>heliophila</i>	LP	Brja	2
<i>P. ponderosa</i> / <i>Symphoricarpos occidentalis</i>	M-LP		
<i>P. ponderosa</i> / <i>Prunus virginiana</i>	SP		
<i>P. ponderosa</i> / <i>Berberis repens</i>	LP		
<i>Fraxinus pennsylvanica</i> / <i>Cornus sericea</i>	SP		
<i>Populus deltoides</i> - <i>Fraxinus pennsylvanica</i>	LP		

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Stipa comata* & *Artemisia tridentata* ssp. *wyomingensis*/*P. smithii*  
**Secondary:** *P. ponderosa*/*Symphoricarpos occidentalis* & *Sarcobatus vermiculatus*/*P. smithii*

**Ownership Classification:** 4

**Exotic Comments:** *Bromus tectorum* and *B. japonicus* are the most ubiquitous weeds and are especially abundant in *Artemisia tridentata* ssp. *wyomingensis* and *Sarcobatus vermiculatus* vegetation types. Scattered patches of *Cirsium arvense* and *Carduus nutans* were observed, mostly confined to overgrazed horse pastures.

**Land-use Disturbance Rating:** 2

**Land-use Disturbance Comments:** Strip mining for coal is the major threat to biodiversity; significant coal reserves are present throughout the polygon. The timber resource is also significant and with former sources somewhat curtailed pressure to harvest the resource could be considerable.

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 1

**Survey Intensity Comments:** Inventory was very biased toward the east-central portion of the polygon; the far western portion (vicinity of Little Bighorn and Bighorn Rivers) received no visitation and riparian corridors were considerably underrepresented.

**Outstanding Sites:** No unique sites were identified, but the Northern Cheyenne Reservation may possess high quality examples of forested community types, especially on the more remote portions of the reservation with difficult access. The Crow Reservation also may have outstanding rangeland examples.

## REA Summary Form

**Polygon Number:** 132a (Wyo)

### **Polygon Description:**

This polygon consists of rolling hills and small valleys. The substrates throughout most of the polygon are inter-bedded shales and sandstones, mostly dipping gently and weathering to rounded hills. Rounded scoria hills cover much of the east-central part of the polygon. Along the western edge, at the foot of the Bighorn Mountains, sediments dip more steeply to the east. Streams flow primarily northeastward off of the Bighorn Mountains.

The matrix vegetation throughout is grassland. In the scoria hills, the matrix is the *Pascopyrum smithii*-*Nassella viridula* association, with *Artemisia cana* ssp. *cana* cover ca. 10%. Outside of the scoria hills, the matrix is probably the *Pascopyrum smithii*-*Bouteloua gracilis*/*Carex filifolia* association, with large areas of *Pascopyrum smithii*-*Pseudoroegneria spicata* grassland. *Rhus trilobata*/*Pseudoroegneria spicata* shrubland and *Calamovilfa longifolia*-*Stipa comata* grassland form small patches in the scoria hills. Throughout the polygon, thickets of the *Crataegus (douglasii, succulenta)*/*Symphoricarpos occidentalis* association grow in draws, and *Acer negundo*/*Prunus virginiana* woodland grows along streams.

The most common land use throughout the polygon is livestock (mainly cattle) ranching. Irrigated and dryland fields are common in the west-central part of the polygon.

### **Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Pascopyrum smithii</i> - <i>Nassella viridula</i>	M	Brja, Eues	3
<i>Rhus trilobata</i> / <i>Pseudoroegneria spicata</i>	SP	Brja	2?
<i>Crataegus (douglasii, succulenta)</i> / <i>Symphoricarpos occidentalis</i>	SP	Brja	2?
<i>Calamovilfa longifolia</i> - <i>Stipa comata</i> ?	SP		
<i>Acer negundo</i> / <i>Prunus virginiana</i>	LP		

### **Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Bouteloua gracilis*/*Carex filifolia*?

**Secondary:** *Crataegus (douglasii, succulenta)*/*Symphoricarpos occidentalis*

**Ownership Classification:** 4.

**Exotic Comments:** Biennial cheatgrass (*Bromus japonicus*) is common throughout, and patches of the herbaceous vegetation covering at least several hundred square meters are co-dominated or dominated by this grass. Leafy spurge (*Euphorbia esula*) is present in the scoria hills in the east-central part, in patches of ca. 100 square meters in the uplands (and perhaps in the riparian zones). This species also is present in valleys along the west-central side of the polygon. Meadow timothy (*Phleum pratense*) and Kentucky bluegrass (*Poa pratensis*) are common throughout the grasslands along the western edge of the polygon, where they frequently co-dominate with native grasses.

**Land-use Disturbance Rating:** 3?

**Land-use Disturbance Comments:** Planted pastures, hay meadows, and grain fields are common in the uplands in the central part of the polygon, and irrigated hay meadows are common in stream valleys throughout. The west central part of the polygon, from Tongue River on the north to Piney Creek on the south, contains many small farms and ranches. Coal strip mines are present in the north-central part.

**Cropland Conversion Rating:** 2?

**Preliminary Conservation Significance Rating: 3**

**Survey Intensity Comments:** Survey was limited to the east-central part of the polygon and consisted of driving stretches of public roads and noting the distribution and abundance of plant associations and of exotic species. Identity of the plant associations is uncertain because no on-the-ground survey was done. Information was also included from a survey of a conservation easement on the Wolf Creek along the west-central boundary of the polygon.

**Outstanding Sites:** A stretch of Wolf Creek from the foot of the Bighorn Mountains downstream for 5 to 6 miles contains a good example of relatively undisturbed foothills riparian vegetation, and is under conservation easement.

## REA Summary Form

**Polygon Number:** 132b (Wyo)

**Polygon Description:**

Throughout most of the polygon, inter-bedded shales and sandstones dip only slightly and form rolling hills with a mosaic of soils of different textures. Along the western edge of the polygon, the sediments dip more steeply eastward off of the Bighorn Mountains, forming a series of sandstone hogbacks and shale strike valleys. Streams flow eastward. Few perennial streams are present.

In the northern half of the polygon, the matrix vegetation is grassland of the *Stipa comata*-*Bouteloua gracilis*/*Carex filifolia* association, with scattered *Artemisia cana* ssp. *cana* (canopy cover <10%) in places. *Cercocarpus montanus* shrub stands, *Artemisia tridentata* ssp. *wyomingensis*/*Pseudoroegneria spicata* (with abundant *Carex filifolia*), and *Pseudoroegneria spicata*-*Carex filifolia* (with *A. tridentata* ssp. *wyomingensis* cover <20%) form large patches on steep slopes. *Pinus ponderosa* forms small patches on hills (probably of the *Pinus ponderosa*/*Pseudoroegneria spicata* association). *Populus angustifolia* forms small groves along streams.

In the southern part of the polygon, on finer-textured soils, the matrix is *Pascopyrum smithii*-*Bouteloua gracilis*/*Carex filifolia* grassland (with *Artemisia tridentata* ssp. *wyomingensis* cover ca. 10%), containing large patches of *Artemisia tridentata* ssp. *wyomingensis*/Mixed grass shrub stands (wherein *Pascopyrum smithii*, *Bouteloua gracilis* and *Stipa comata* are the dominant understory plants) and small patches of *Stipa comata*-*Bouteloua gracilis*/*Carex filifolia* grassland. A few small *Populus deltoides* groves occur on larger streams.

Pine Ridge, in the southeastern part of the polygon, contains large patches of ponderosa pine woodland (probably the *Pinus ponderosa*/*Pseudoroegneria spicata* association).

Throughout, draws contain small patches of several riparian communities: *Spartina pectinata* association, *Scirpus pungens* association, and *Acer negundo* woodlands. The *Sarcobatus vermiculatus*/*Pascopyrum smithii* association forms small patches in draws throughout, and a large patch in a playa in the southern half.

Livestock grazing (mostly cattle with some sheep) is the most common land use.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Stipa comata</i> - <i>Bouteloua gracilis</i> / <i>Carex filifolia</i>	SP-M		
<i>Pascopyrum smithii</i> - <i>Bouteloua gracilis</i> / <i>Carex filifolia</i>	SP-LP-M		
<i>Cercocarpus ledifolius</i> /??	LP		
<i>Sarcobatus vermiculatus</i> / <i>Pascopyrum smithii</i>	SP-LP	Brco	2
<i>Pseudoroegneria spicata</i> - <i>Carex filifolia</i>	SP-LP		
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i> /Mixed Grass	LP		
<i>Populus angustifolia</i> /??	SP		
<i>Populus deltoides</i> /??	SP		
<i>Pinus ponderosa</i> / <i>Pseudoroegneria spicata</i>	SP-LP		
<i>Spartina pectinata</i>	SP		
<i>Scirpus pungens</i>	SP		
<i>Acer negundo</i> /??	SP	Brin,Dagl	3
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i> / <i>Pseudoroegneria spicata</i>	SP		
<i>Pascopyrum smithii</i> - <i>Nasella viridula</i>	SP	Meof, Brco	3

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Bouteloua gracilis*/*Carex filifolia* with *Artemisia tridentata* spp.  
wyomingensis

**Secondary:** *Pseudoroegneria spicata*-*Carex filifolia*

**Ownership Classification:** 4

**Exotic Comments:** Cheatgrass (*Bromus japonicus* or *B. commutatus*) and yellow sweetclover (*Melilotus officinale*) are widespread and common in the grasslands and sagebrush shrublands on finer-textured soils. Canada thistle (*Cirsium arvense*), yellow sweetclover, smooth brome (*Bromus inermis* var. *inermis*), and orchardgrass (*Dactylis glomerata*) are common, and leafy spurge (*Euphorbia esula*) is present, in the riparian zones.

**Land-use Disturbance Rating:** 2

**Land-use Disturbance Comments:** Irrigated hay meadows form large patches throughout the polygon. A small oilfield is present in the southeastern part.

**Cropland Conversion Rating:** ?

**Preliminary Conservation Significance Rating:** 2

**Survey Intensity Comments:** Survey was good in the middle portion and western portions, but the hills along the eastern side were not surveyed. (Survey consisted of driving stretches of public roads and recording the distribution and abundance of vegetation types, exotic plants, and other features.) Identity of the plant associations is somewhat uncertain because quick on-the-ground survey was done only in the central part, as part of a previous evaluation of a conservation easement.

**Outstanding Sites:** None known.

## REA Summary Form

**Polygon Number:** 132c (Wyo)

**Polygon Description:**

Throughout most of the polygon, the landscape consists of rolling hills and narrow valleys eroded into gently-dipping, inter-bedded shales and sandstones that weather to a variety of soil textures. Steep hills and deep draws of the Powder River Breaks are present along the eastern boundary of the polygon. Few perennial streams are present. Streams flow primarily eastward into the Powder River, which forms the eastern boundary of the polygon.

In the southern part, there is no obvious vegetation matrix. Grasslands of the *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* association and the *Pascopyrum smithii*-*Bouteloua gracilis*/*Carex filifolia* association, both with canopy cover of *Artemisia tridentata* ssp. *wyomingensis* to ca. 15%, are mixed in large patches covering about equal areas. Large patches of the *Artemisia tridentata* ssp. *wyomingensis*/Mixed Grass association (with *Pascopyrum smithii* and *Bouteloua gracilis* as dominant species) occur in the mix of grasslands. Draws contain patches of the *Pascopyrum smithii*-*Nasella viridula* association and the *Artemisia cana* ssp. *cana*/*Pascopyrum smithii* association.

In the central and northern parts, the *Pascopyrum smithii*-*Bouteloua gracilis*/*Carex filifolia* association, with *Artemisia tridentata* ssp. *wyomingensis* canopy cover to 25%, forms the matrix. Large patches have sagebrush canopy cover >25% and form the *Artemisia tridentata* ssp. *wyomingensis*/Mixed Grass association (with *Pascopyrum smithii* and *Bouteloua gracilis* as the major species). Small patches of *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* grasslands (with *Artemisia tridentata* ssp. *wyomingensis* cover 10%-25%) are present on coarser soils, and small patches of *Calamovilfa longifolia* grow on sandy ridges. Draws contain *Artemisia tridentata* ssp. *wyomingensis*/*Pascopyrum smithii* vegetation.

In the Powder River Breaks along the eastern side of the polygon, the matrix vegetation includes small patches of sparse *Pseudoroegneria spicata*-*Bouteloua gracilis* vegetation on steep slopes, *Yucca glauca*/*Calamovilfa longifolia* vegetation on sandy ridges, and *Artemisia tridentata* ssp. *wyomingensis*/Mixed Grass association (with *Pascopyrum smithii* and *Bouteloua gracilis* as the major species) on gentle slopes.

A large *Populus deltoides* riparian forest grows along Powder River, and stretches the length of the eastern side of the polygon.

Livestock grazing is the most common land use, and ranches are scattered throughout the polygon.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Stipa comata</i> - <i>Bouteloua gracilis</i> - <i>Carex filifolia</i> w/ <i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	LP		
<i>Pascopyrum smithii</i> - <i>Bouteloua gracilis</i> / <i>Carex filifolia</i> w/ <i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	LP	Brja	2
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i> /Mixed Grass	LP	Brja	2
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i> / <i>Pascopyrum smithii</i>		Brja	2
<i>Populus deltoides</i> / <i>Pascopyrum smithii</i> ?	LP	Tach	1?
<i>Pascopyrum smithii</i> - <i>Nasella viridula</i>	SP-LP	Brja	3
<i>Artemisia cana</i> ssp. <i>cana</i> / <i>Pascopyrum smithii</i>	SP-LP	Brja	3
<i>Pascopyrum smithii</i> - <i>Bouteloua gracilis</i> / <i>Carex filifolia</i> w/ <i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	M	Brja, Brte	2
<i>Stipa comata</i> - <i>Bouteloua gracilis</i> <i>Carex filifolia</i> w/ <i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	SP	Brja, Brte	2
<i>Calamovilfa longifolia</i> - <i>Stipa comata</i> ?	SP		
<i>Yucca glauca</i> / <i>Calamovilfa longifolia</i>	SP		
<i>Pseudoroegneria spicata</i> - <i>Bouteloua gracilis</i>	SP		

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Bouteloua gracilis*/*Carex filifolia* with *Artemisia tridentata* ssp. *wyomingensis* (to 25% canopy cover)

**Secondary:** *Populus deltoides*/*Pascopyrum smithii*(?)

**Ownership Classification:** 3

**Exotic Comments:** Biennial brome grasses (*Bromus tectorum* and *B. japonicus*) abound in the uplands and co-dominate patches up to several hundred square meters. Leafy spurge (*Euphorbia esula*) is present in the uplands in the drainage of Clear Creek and probably farther north. *Tamarix chinensis* is present in the *Populus deltoides* forest along Powder River, but its extent and abundance are unknown

**Land-use Disturbance Rating:** 2

**Land-use Disturbance Comments:** Irrigated hay meadows are common along the larger streams, and planted pastures (mainly crested wheatgrass) are present in the uplands.

**Cropland Conversion Rating:** ?

**Preliminary Conservation Significance Rating:** 1

**Survey Intensity Comments:** The northern quarter of the polygon (north of U.S. Highway 14-16) was not surveyed. Survey consisted of driving stretches of public roads and noting the distribution and abundance of plant associations and of exotic species. Identity of the plant associations is uncertain because on-the-ground survey was limited to two locations, one in the south and one in the center.

**Outstanding Sites:** Powder River, which runs the entire length of the eastern side of this polygon and the western side of polygon 132d, supports a *Populus deltoides* woodland with excellent tree reproduction and an excellent example of a plains stream fish fauna. The entire stretch of the river in this polygon and in polygon #132d might be a valuable conservation site.

## REA Summary Form

**Polygon Number:** 132d (Wyo)

### **Polygon Description:**

Throughout most of the polygon, the landscape consists of rolling hills and narrow stream valleys developed in gently-dipping, inter-bedded shales and sandstones that weather to a variety of soil textures. Steep hills and deep draws of the Powder River Breaks are present along the western boundary of the polygon. Few perennial streams are present. Streams flow primarily westward into the Powder River, which forms the western boundary of the polygon.

On broad drainage divides in the central part of the polygon, the matrix is formed by *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* grassland with *Artemisia tridentata* ssp. *wyomingensis* canopy cover ca. 10%. *Pascopyrum smithii*-*Bouteloua gracilis*/*Carex filifolia* grassland, with *Artemisia tridentata* ssp. *wyomingensis* canopy cover 10%-25%, forms large patches. Small patches of *Artemisia cana* ssp. *cana*/*Pascopyrum smithii* association and *Pascopyrum smithii*-*Nasella viridula* grassland grow in draws. Small patches of the *Spartina pectinata* association grow in riparian zones.

In the Powder River Breaks along the western side of the polygon, the matrix vegetation includes small patches of sparse *Pseudoroegneria spicata*-*Bouteloua gracilis* vegetation on steep slopes, *Yucca glauca*/*Calamovilfa longifolia* vegetation on sandy ridges, and *Artemisia tridentata* ssp. *wyomingensis*/Mixed Grass association (with *Pascopyrum smithii* and *Bouteloua gracilis* as the dominant herbaceous species) on gentle slopes.

A large *Populus deltoides* riparian forest grows along Powder River, and stretches the length of the western side of the polygon.

### **Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Stipa comata</i> - <i>Bouteloua gracilis</i> - <i>Carex filifolia</i>	M		
<i>Pascopyrum smithii</i> - <i>Bouteloua gracilis</i> / <i>Carex filifolia</i>	LP	Brja	2
<i>Populus deltoides</i> / <i>Pascopyrum smithii</i> ?	LP	Tach	1?
<i>Artemisia cana</i> ssp. <i>cana</i> / <i>Pascopyrum smithii</i>	SP	Brja	3
<i>Pascopyrum smithii</i> - <i>Nasella viridula</i>	SP		
<i>Spartina pectinata</i>	SP		
<i>Pseudoroegneria spicata</i> - <i>Bouteloua gracilis</i>	SP		
<i>Yucca glauca</i> / <i>Calamovilfa longifolia</i>	SP		
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i> /Mixed Grass	SP		

### **Polygon Natural Community Classification:**

**Primary:** *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia*?

**Secondary:** *Populus deltoides*/*Pascopyrum smithii*?

**Ownership Classification:** 3.

**Exotic Comments:** Biennial cheatgrass (*Bromus japonicus*) is common throughout the polygon on finer-textured soils, and co-dominates or dominates patches up to several hundred square meters in some of the grasslands. *Tamarix chinensis* is present in the *Populus deltoides* woodland along Powder River, but its extent and abundance are unknown.

**Land-use Disturbance Rating:** 3.

**Land-use Disturbance Comments:** Oil fields cover a considerable part of the southern half of the polygon.

**Cropland Conversion Rating:** ?

**Preliminary Conservation Significance Rating:** 1.

**Survey Intensity Comments:** Survey was limited to the southern half of the polygon, and consisted of driving stretches of public roads and noting the distribution and abundance of plant associations and of exotic species. Identity of the plant associations is uncertain because on-the-ground survey was limited to two locations.

**Outstanding Sites:** Powder River, which runs the entire length of the western side of this polygon and the eastern side of polygon #132c, supports a plains cottonwood woodland with excellent tree reproduction and an excellent example of a plains stream fish fauna. The entire stretch of the river in this polygon and in polygon #132c might be a valuable conservation site.

## REA Summary Form

**Polygon Number:** 134 (SD)

**Polygon Description:** [See Survey Intensity Comments below.]

Mid and upper-slopes are dominated by the *Stipa comata/Bouteloua gracilis/Carex filifolia* natural community. *Pascopyrum smithii* density increases down slope and is joined by *Artemisia tridentata*. Wide ravine and drainage floodplain regions display the *Artemisia cana/Pascopyrum smithii* natural community. Drainage channels are alkaline with *Distichlis spicata* and *Triglochin maritima* present. Located on the prairie are "slickspots" of sparse vegetation identified by the *Artemisia tridentata/Bouteloua gracilis* association. Artificial impoundments and their associated wet meadows occur as a water source for livestock. Meagerly vegetated badlands occur sporadically.

### **Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Stipa comata-Bouteloua gracilis-Carex filifolia	M		
Artemisia tridentata/Pascopyrum smithii	LP		
Artemisia cana/Pascopyrum smithii	LP		
Artemisia tridentata/Bouteloua gracilis	SP		
Eleocharis palustris Herbaceous Vegetation	SP		
Distichlis spicata-Hordeum jubatum	SP		
Scirpus maritimus Herbaceous Vegetation	SP		

### **Polygon Natural Community Classification:**

**Primary:** *Stipa comata/Bouteloua gracilis/Carex filifolia*

**Secondary:**

**Ownership Classification:** 4

**Exotic Comments:** Unknown

**Land-use Disturbance Rating:** Unknown

**Land-use Disturbance Comments:** Unknown

**Cropland Conversion Rating:** Unknown

**Preliminary Conservation Significance Rating:** Unknown

**Survey Intensity Comments:** Very poor geographic coverage of the polygon. No interior public road access available. Polygon viewed from two points on southeast perimeter.

**Outstanding Sites:** Unknown

**REA Summary Form**

**Polygon Number:** 137 (MT)

**Polygon Description:**

The MT portion of this polygon is characterized by extensive, rolling, low relief plains with shallowly incised drainages. Drainages have limited woody draw development with *Fraxinus pennsylvanica* in the overstory and *Symphoricarpos occidentalis* and *Poa pratensis* understory dominants. The only area of appreciable dissection (and woodland and forest) is the Humboldt Hills. Parent materials are primarily noncarbonate shales and siltstones that weather to heavy soils dominated by *Pascopyrum smithii*-*Bouteloua gracilis* (and/or *Elymus lanceolatus* var. *lanceolatus*). *Sarcobatus vermiculatus*- and *Artemisia tridentata* ssp. *wyomingensis*-dominate alkali flats scattered in swales and sinks. The Elevation range is only 400 feet., from 2,950 to 3,350 ft.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii-Bouteloua gracilis-Carex filifolia	M-SP		
Artemisia tridentata ssp. wyomingensis/Pascopyrum smithii	M-LP		
Pascopyrum smithii alluvial bottom	LP		
P. smithii-Stipa comata	LP		
P. smithii-Nasella viridula	SP-LP		
Stipa comata-Carex filifolia	SP-LP		
Artemisia cana/Poa pratensis	SP		
A. tridentata ssp. wyomingensis/P. smithii-Nasella viridula	LP		
A. tridentata ssp. wyomingensis/Opuntia polyacantha	SP-LP		
Sarcobatus vermiculatus/Pascopyrum smithii	SP-LP		
S. vermiculatus/Distichlis spicata-(Puccinellia nuttalliana)	SP-LP		
Scirpus pungens	SP		
Puccinellia nuttallii salt flats	SP		
Carex spp. (praegracilis ?, wetland)	SP		
Typha latifolia	SP		
Distichlis spicata var. stricta	SP		
Schizachyrium scoparium-Bouteloua spp.-Carex filifolia	SP-LP		
Fraxinus pennsylvanica/Poa pratensis	SP		
Fraxinus pennsylvanica/Symphoricarpos occidentalis	SP		

**Polygon Natural Community Classification:**

**Primary:** Pascopyrum smithii-Bouteloua gracilis-Carex filifolia  
**Secondary:** Artemisia tridentata ssp. wyomingensis/Pascopyrum smithii

**Ownership Classification:** 4

**Exotic Comments:** *Bromus japonicus* is ubiquitous but populations are not so dense.. *Agropyron cristatum* is planted as dense nesting cover but not extensively. Very cursory survey conducted, based mostly on road-logged information.

**Land-use Disturbance Rating:** 2

**Land-use Disturbance Comments:** At least one abandoned oil field but new one under development, along with associated pipeline.

**Cropland Conversion Rating:** 3

**Preliminary Conservation Significance Rating: 3**

**Survey Intensity Comments:** Survey of polygon 137 was very cursory and derived mostly from road -log, at least pertaining to MT portion (described here).

**Outstanding Sites:** No sites of special note were found and given the high intensity of grazing none are likely to be revealed (in MT).

## REA Summary Form

**Polygon Number:** 137 (SD)

### **Polygon Description:**

Mid- and upper-slopes are dominated by the *Stipa comata-Bouteloua gracilis-Carex filifolia* natural community. *Pascopyrum smithii* density increases down slope and is joined by *Artemisia tridentata*. Wide ravine and drainage floodplain regions display the *Artemisia cana/Pascopyrum smithii* natural community. Drainage channels are alkaline with *Distichlis spicata* and *Triglochin maritima* present. Variations on this vegetative pattern can be found throughout the polygon, but, in general, species densities and placement follow this pattern. Located on the prairie are "slickspots" of sparse vegetation identified by the *Artemisia tridentata/Bouteloua gracilis* association. Artificial impoundments and their associated wet meadows occur frequently as a water source for livestock. Meagerly vegetated badlands occur sporadically throughout the polygon.

### **Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Stipa comata-Bouteloua gracilis-Carex filifolia</i>	M	Brte	1
<i>Artemisia tridentata/Pascopyrum smithii</i>	LP	Brte	1
<i>Artemisia cana/Pascopyrum smithii</i>	LP		
<i>Pascopyrum smithii-Bouteloua gracilis-Carex filifolia</i>	SP		
<i>Artemisia tridentata/Bouteloua gracilis</i>	SP		
<i>Eleocharis palustris</i> Herbaceous Vegetation	SP		
<i>Distichlis spicata-Hordeum jubatum</i>	SP		
<i>Scirpus maritimus</i> Herbaceous Vegetation	SP		
Eroding Great Plains Badlands	SP		

### **Polygon Natural Community Classification:**

**Primary:** *Stipa comata/Bouteloua gracilis/Carex filifolia*

**Secondary:** *Artemisia tridentata/Pascopyrum smithii*

**Ownership Classification:** 4

**Exotic Comments:** Infestation levels were generally low throughout the polygon.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 3

**Survey Intensity Comments:** Completed good geographic coverage of the polygon using standard sampling technique.

**Outstanding Sites:** None

**REA Summary Form**

**Polygon Number:** 140 (SD)

**Polygon Description:**

Two dominant watersheds traverse westerly to easterly across polygon 140. The South Fork Grand River and North Fork Moreau River greatly influence the landscape diversity of the region. Floodplain terraces are vegetated by *Calamovilfa longifolia* and *Pascopyrum smithii*. Scattered patches of cottonwood sporadically occur. Instances of greater than 20 percent canopy cover are uncommon. Wolfberry may occur in the understory in these regions. More heavily wooded ravines support *Fraxinus pennsylvanica/Prunus virginiana*. Much of the rolling upland prairie of the polygon is vegetated by needle-and-thread in association with blue grama and needle-leaf sedge. Near drainageways *Artemisia cana* increases in the shrub layer. A variety of silver sage associations occur and often are difficult to distinguish. Many drainageways have terraces vegetated with wheatgrass in association with silver sage. Upland prairies may be vegetated by *Artemisia tridentata* in association with *Stipa comata* or *Pascopyrum smithii*. The *A. tridentata* herbaceous vegetation communities appear to become more common westerly. Wide prairie swales and drainageways are commonly vegetated by alkaline wet meadow species including: *Distichlis spicata*, *Hordeum jubatum*, *Spartina pectinata*, and *Suaeda depressa*. Although the Little Missouri watercourse was not included in the polygon, observations of this area suggested the value of future vegetative work. Banks did not appear highly degraded with smooth brome infestations, which is a very common occurrence along most large prairie waterways. Regions of coniferous woodlands were found in the Cave Hills, Jump-off Divide, and Slim Buttes regions. Badlands were common in these and other regions as well.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Stipa comata-Bouteloua gracilis-Carex filifolia	M	Brte	2
Artemisia cana Herbaceous Vegetation	M		
Artemisia cana/Pascopyrum smithii	LP		
A. cana/Stipa comata	LP		
Artemisia tridentata Herbaceous Vegetation	M		
Artemisia tridentata/Pascopyrum smithii	LP		
A. tridentata/Stipa comata	LP		
A. tridentata/Bouteloua gracilis	LP		
Eroding Great Plains Badlands	LP		
Pinus ponderosa/Schizachyrium scoparium	LP		
Fraxinus pennsylvanica/Prunus virginiana	LP		
Populus deltoides/Symphoricarpos occidentalis	LP		
Pascopyrum smithii-Nasella viridula	M		
Calamovilfa longifolia-Pascopyrum smithii	LP		
Schizachyrium scoparium-Carex inops ssp. heliophila	SP		
Pinus ponderosa/Prunus virginiana	SP		
Spartina pectinata-Calamagrostis stricta-Carex spp.	SP		
Shepherdia argentea Shrubland	SP		
Scirpus maritimus Herbaceous Vegetation	SP		
Eleocharis palustris Herbaceous Vegetation	SP		
Distichlis spicata-Hordeum jubatum	SP		
Scirpus tabernaemontani Herbaceous Vegetation	SP		

**Polygon Natural Community Classification:**

**Primary:** Stipa comata-Bouteloua gracilis-Carex filifolia  
**Secondary:** Artemisia cana Herbaceous Vegetation

**Ownership Classification:** 4

**Exotic Comments:** Infestation levels were low to moderate throughout the polygon. Some trace to low abundance areas were identified.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 1

**Survey Intensity Comments:** Completed good geographic coverage of the polygon using standard sampling technique.

**Outstanding Sites:** Spring and Sand Creeks Alkaline Wet Meadows, South Sand Creek West, North Fork Moreau River and Moreau River .

## REA Summary Form

**Polygon Number:** 141 (MT)

**Polygon Description:**

This polygon encompasses the Lone Pine Escarpment and surrounding foothills. The main mass of the escarpment is composed of gray sandstone with interbedded volcanic ash of the Arikaree Formation, the only occurrence of this substrate in the state. Outlying areas are clays and sandstones and minor amounts of limestone of the White River Formation. The gently rolling foothills and plains are derived from clay shales, siltstones, mudstone, and lesser exposures of sandstone, impure limestone, and lignitic beds; terraces and floodplains are formed in alluvium weathered from shale and sandstone. Streams draining the Lone Pines are deeply incised and the mostly steep slopes support a variety of aspect-dependent *Pinus ponderosa*-dominated plant associations, the most common of which is putatively *P. ponderosa*/*Carex inops* var. *heliophila* (G-3), and several others rated G-3. The foothills and plains are dominated by community types wherein combinations of *Artemisia tridentata* ssp. *wyomingensis* and/or *Pascopyrum smithii* (and/or *E. lanceolatus* var. *lanceolatus*) with other range plants constitute the greatest cover. The extent of badlands or salt-affected environments/vegetation types is limited in contrast to surrounding polygons, but the distinctive *Artemisia tridentata*/*Opuntia polyacantha* community type (association presently unrecognized) apparently is broadly distributed and characteristic of these salt-affected sites.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp.</u>	<u>Rating</u>
Schizachyrium scoparium-Carex filifolia	SP		
Pascopyrum smithii Clay Pan - Alluvial Flat	M-LP		
Pascopyrum smithii-Bouteloua gracilis-Carex filifolia	M-LP		
Pascopyrum smithii-Nasella viridula	SP-LP		
Pascopyrum smithii-Stipa comata	LP		
Stipa comata-Bouteloua gracilis-Carex filifolia	LP-SP		
Artemisia tridentata ssp. wyomingensis/P. smithii	M-LP		
A. tridentata ssp. wyomingensis/P. smithii-N. viridula	SP		
A. tridentata ssp. wyomingensis/Opuntia polyacantha	SP		
A. cana/Pascopyrum smithii	SP-LP		
A. cana/Poa pratensis	SP		
Juniperus horizontalis/Carex inops var. heliophila	SP		
Rhus trilobata/Pseudoroegneria spicata	SP		
Pinus ponderosa/Carex inops var. heliophila	LP-M		
P. ponderosa/Prunus virginiana	SP-LP		
P. ponderosa/Juniperus communis	SP		
P. ponderosa/Pseudoroegneria spicata	SP		
P. ponderosa/Poa pratensis	SP-LP		
Fraxinus pennsylvanica/Prunus virginiana	SP		
Populus tremuloides/Mahonia repens	SP-LP		
Populus tremuloides/Cornus sericea	SP		
Distichlis spicata var. stricta	SP		
Typha latifolia	SP		

**Polygon Natural Community Classification:**

**Primary:** *Pinus ponderosa*/*Carex inops* var. *heliophila*  
**Secondary:** *Artemisia tridentata* ssp. *wyomingensis*/*P. smithii*

**Ownership Classification:** 2

**Exotic Comments:** *Bromus tectorum* (*B. japonicus*) are common in all rangeland communities (and some open forest/woodland types) but particularly dense in *A. tridentata* ssp. *wyomingensis*/*P. smithii*. *Poa pratensis* has expanded to carpet many mesic forested sites to exclusion of natives, most particularly in *P. ponderosa*/*Carex inops* and *Populus tremuloides* and *Fraxinus pennsylvanica*-dominated sites. Numerous plantings of *Melilotus officinalis* and *Agropyron cristatum* for “dense nesting cover” were noted. Landscapes surrounding the National Forest have been very heavily impacted by cattle and represent reservoirs of weedy species.

**Land-use Disturbance Rating:** 2

**Land-use Disturbance Comments:** Clearcutting (and other cutting practices) ongoing on National Forest lands. Summer home development on flanks of Lone Pine Escarpment

**Cropland Conversion Rating:** 3

**Preliminary Conservation Significance Rating:** 1

**Survey Intensity Comments:** Low intensity, even by REA standards, because so many plots were established by Hansen and Hoffman (988) in the course of their vegetation study: should specific locations be sought their publication contains such.

**Outstanding Sites:** None were pinpointed, but areas within the Custer National Forest holdings, not intensively grazed should be exemplary for *Pinus ponderosa* community types. Of note, *Phlox andicola* has been tentatively identified on National Forest land.

## REA Summary Form

**Polygon Number:** 141 (SD)

### **Polygon Description:**

The *Stipa comata-Bouteloua gracilis-Carex filifolia* natural community dominates most upper slope and ridgetop prairie. Scattered *Calamovilfa longifolia* patches occur throughout. Alkaline wet meadows occur in most drainage regions and consist of *Scirpus maritimus*, *Hordeum jubatum*, *Distichlis spicata*, and *Eleocharis* species. Artificial impoundments provide water sources for livestock. Hardwoods, *Populus deltoides* and *Fraxinus pennsylvanica*, are widely scattered throughout low-lying regions. Drainage terraces support an extensive *Sarcobatus vermiculatus/Pascopyrum smithii* community on eastern portions of the north-south road traversing the polygon. In contrast, on western portions, an extensive *Artemisia cana/Pascopyrum smithii* community dominates. Battle ridge, on the far western portion of the polygon, appears to support coniferous woodland and/or forest communities. The ridge is not accessible from the South Dakota road system.

### **Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Stipa comata-Bouteloua gracilis-Carex filifolia	M	Brte	2
Artemisia cana/Pascopyrum smithii	LP	Brte	2
Sarcobatus vermiculatus/Pascopyrum smithii	LP	Brte	2
Eleocharis palustris Herbaceous Vegetation	SP		
Distichlis spicata - Hordeum jubatum	SP		
Scirpus maritimus Herbaceous Vegetation	SP		

### **Polygon Natural Community Classification:**

**Primary:** Stipa comata-Bouteloua gracilis-Carex filifolia  
**Secondary:** Artemisia cana/Pascopyrum smithii

**Ownership Classification:** 4

**Exotic Comments:** Infestation levels range from low to moderate throughout the polygon.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 3

**Survey Intensity Comments:** Completed fair geographic coverage of the polygon using standard sampling technique. The far western South Dakota portion was not accessible.

**Outstanding Sites:** None

## REA Summary Form

**Polygon Number:** 142 (MT)

**Polygon Description:**

Polygon exhibits a wide range of geomorphic features from gently undulating near tablelands, deeply dissected plains and hills, river breaks, and badlands (formed in alluvium and colluvium). Parent materials are primarily sedimentary with sandstone, shale and siltstone predominating. In the south-central portion there is over 400 ft of local vertical relief, with red scoria buttes widely spaced in terrain approaching badlands; overall polygon elevations range from 2,100 to 4,980 feet. Historically the primary natural disturbances were erosion and wildfire; fire regimes have been altered through fire suppression and herbicide application to shrubs has had a major impact on composition of this steppe. *Elymus lanceolatus* var. *lanceolatus*-*Stipa comata* is the primary community type of heavier soils found in basins and flats, though *Artemisia tridentata* ssp. *wyomingensis*/*E. lanceolatus* is the potential climax dominant on all but the heaviest soils and almost certainly is on upslope positions with lighter soils. The forested portions are restricted to higher elevations, usually dissected sandstone and siltstone sedimentaries with moderate to steep slopes (>30%). A wide range of *Pinus ponderosa* types, mostly woodlands in structure, are represented on about a third of the landscape. The most common forest type is *P. ponderosa*/*Carex inops* var. *heliophila*. With the renewed demand for timber, cutting threatens most of these forests/woodlands with roading and associated noxious weed problems. High weed densities (*Bromus tectorum*, *B. japonicus*, *Cirsium arvense*, *Coniza canadensis*) were noted in spots where slash piles had been burned, even if the slash was somewhat scattered prior to burning.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Elymus lanceolatus</i> var. <i>lanceolatus</i> - <i>Nasella viridula</i>	LP		
<i>E. lanceolatus</i> var. <i>lanceolatus</i> - <i>Bouteloua gracilis</i>	M		
<i>Schizachyrium scoparium</i> - <i>Bouteloua</i> spp.	SP		
<i>Artemisia cana</i> / <i>E. lanceolatus</i> var. <i>lanceolatus</i>	LP		
<i>A. tridentata</i> ssp <i>wyomingensis</i> / <i>E. lanceolatus</i> - <i>B. gracilis</i>	LP-M		
<i>A. tridentata</i> ssp <i>wyomingensis</i> / <i>E. lanceolatus</i> - <i>N. viridula</i>	M-LP		
<i>A. tridentata</i> ssp. <i>wyomingensis</i> - <i>Atriplex confertifolia</i>	SP		
<i>Atriplex confertifolia</i> - <i>Chrysothamnus nauseosus</i>	SP-LP		
<i>Symphoricarpos occidentalis</i> / <i>E. lanceolatus</i>	SP		
<i>Pinus ponderosa</i> / <i>Carex inops</i> var. <i>heliophila</i>	M		
<i>P. ponderosa</i> / <i>Festuca idahoensis</i>	SP		
<i>P. ponderosa</i> / <i>Pseudoroegneria spicata</i>	SP-LP		
<i>P. ponderosa</i> / <i>Schizachyrium scoparium</i>	SP		
<i>P. ponderosa</i> / <i>Symphoricarpos occidentalis</i>	LP		
<i>P. ponderosa</i> / <i>Prunus virginiana</i>	SP		
<i>P. ponderosa</i> / <i>Berberis repens</i>	SP		
<i>P. ponderosa</i> - <i>Juniperus scopulorum</i> woodland	SP		
<i>Elymus lanceolatus</i> var. <i>lanceolatus</i> alluvial bottom	SP		
<i>Calamovilfa longifolia</i> - <i>E. lanceolatus</i> var <i>lanceolatus</i>	SP		
<i>Elymus lanceolatus</i> var. <i>lanceolatus</i> - <i>Hordeum jubatum</i>	SP		
<i>Hordeum jubatum</i>	SP		
<i>Spartina pectinata</i>	SP		
<i>Eleocharis palustris</i>	SP		
<i>Typha latifolia</i>	SP		
<i>Carex praegracilis</i>	SP		
<i>Fraxinus pennsylvanica</i> -( <i>Ulmus americana</i> )/ <i>Prunus virginiana</i>	SP		

**Polygon Natural Community Classification:**

**Primary:** *A. tridentata* ssp *wyomingensis*/*Elymus lanceolatus* var. *lanceolatus*-*B. gracilis*  
**Secondary:** *E. lanceolatus* var. *lanceolatus*-*Bouteloua gracilis* or *Pinus ponderosa*/*Carex inops*

**Ownership Classification: 4**

**Exotic Comments:** *Bromus japonicus*, *B. tectorum*, *Cirsium arvense*, and *Conyza canadensis* and *Sonchus asper* form dense cover where slash has been burned, serving as inoculation sources (habitat is apparently not a factor). Annual bromes are capable of establishing dense populations in overgrazed conditions mostly, but unstressed prairie, particularly moister Wyoming big sage stands support dense populations

**Land-use Disturbance Rating: 2**

**Land-use Disturbance Comments:** Most agricultural cropping (hayfields and alfalfa) is concentrated along Little Pumpkin Creek, leaving the steppe-dominated landscape predominantly intact, with the exception of herbicide spraying of sagebrush (burning also employed). Clearcutting dominates the cutting practices used across all forest types.

**Cropland Conversion Rating: 3**

**Preliminary Conservation Significance Rating: 2**

**Survey Intensity Comments:** Inventory focused on public lands and secondarily on un-posted private lands with direct road access. The access road running N-S approximately bisected the northern one half of the polygon; the southern half was not inventoried.

**Outstanding Sites:** No outstanding sites were located; a brief sortie into the adjacent uplands of Custer National Forest indicated some good to excellent condition Ponderosa forest types typical of the northern Great Plains, but this area was for some arbitrary reason not included in Polygon 142 (or 159).

## REA Summary Form

**Polygon Number:** 144 (SD)

**Polygon Description:**

Much of this polygon remains in the *Pascopyrum smithii*-*Bouteloua gracili*-*Carex filifolias* natural community. *Schizachyrium scoparium* occurs on most hillsides and ridgetops. *Andropogon gerardii* and *Spartina pectinata* may be identified in low-lying, lightly grazed regions. *Artemisia cana*/*Pascopyrum smithii* community vegetation is found on drainage terraces and lower slopes. Small, spring-fed intermittent and perennial creeks support green ash, cottonwood, and oak. Woody draws vegetated by the *Quercus macrocarpa*/*Prunus virginiana* association are common.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii-Bouteloua gracilis-Carex filifolia	M	Poa spp., Bromus spp.	1,2
Artemisia cana/Pascopyrum smithii	LP		
Quercus macrocarpa/Prunus virginiana	LP		
Populus deltoides/Fraxinus pennsylvanica Lowland Forest	LP		
Schizachyrium scoparium-Bouteloua spp.	SP		

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Bouteloua gracilis*-*Carex filifolia*

**Secondary:** *Artemisia cana*/*Pascopyrum smithii*

**Ownership Classification:** 4

**Exotic Comments:** Infestation levels difficult to distinguish due to inaccessibility.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 3

**Survey Intensity Comments:** Much of polygon inaccessible by public roads. Topography allows most of the polygon to be viewed at great distances.

**Outstanding Sites:** None

## REA Summary Form

**Polygon Number:** 149 (SD)

**Polygon Description:**

Natural prairie communities of this polygon vary quite extensively and frequently. Overall, the dominant community appears to be the *Stipa comata-Bouteloua gracilis-Carex filifolia* association. Large regions including *Artemisia cana* also occur and are not restricted to drainage bottoms. Additionally, the *Pascopyrum smithii-Bouteloua gracilis* natural community occurs more often west of highway 65, often in conjunction with *Artemisia cana*. Drainage regions may have hardwood species of the *Populus deltoides/Fraxinus pennsylvanica*- association. Low-lying areas of the prairie where moisture retention increases are often vegetated with alkaline wet meadow species, i.e. *Distichlis spicata*, *Hordeum jubatum*, and *Suaeda depressa*. Infestation levels of *Agropyron cristatum* are extremely high throughout much of this polygon. Regions of such complete infestation with displacement of native species so advanced were typed as a distinct community (see below). Floodplain terraces of the Grand River were vegetated by the *Populus deltoides/Calamovilfa longifolia* community where sufficient canopy closure existed. More open regions were the *Calamovilfa longifolia-Pascopyrum smithii* natural community.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Stipa comata-Bouteloua gracilis-Carex filifolia	M	Brte	2
Artemisia cana/Stipa comata	LP	Brte	2
(Agropyron cristatum/Bouteloua gracilis Degraded Prairie)	LP		
Pascopyrum smithii-Bouteloua gracilis-Carex filifolia	M	Agcr, Brte	3,2
Artemisia cana/Pascopyrum smithii	LP	Agcr	3
Eroding Great Plains Badlands	LP		
Populus deltoides/Fraxinus pennsylvanica Lowland Forest	LP	Agcr, Brin	3,2
(Populus deltoides/Calamovilfa longifolia)	LP		
Calamovilfa longifolia-Pascopyrum smithii	LP		

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii-Bouteloua gracilis-Carex filifolia*  
**Secondary:** *Artemisia cana/Pascopyrum smithii*

**Ownership Classification:** 4

**Exotic Comments:** Many native prairie areas have been converted to *Agropyron cristatum*.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 3

**Survey Intensity Comments:** Completed good geographic coverage of the polygon using standard sampling technique.

**Outstanding Sites:** None

## REA Summary Form

**Polygon Number:** 152 (SD)

**Polygon Description:**

Much of this polygon has been severely altered by conversion of the glacial plain to cropland. Species of brome, e.g. *Bromus inermis*, *B. tectorum*, *B. japonicus*, have invaded many areas. The *Pascopyrum smithii*-*Bouteloua gracilis* natural community on the northern portion of the polygon is heavily grazed and appears to have been managed in this manner for many years. The *Fraxinus pennsylvanica*-*Ulmus americana* community found in many drainages has been severely degraded by cattle, for example Spring Creek. The Missouri Breaks region flowing to the Missouri River does contain some less disturbed grassland, but tracts are much smaller than in other polygons sampled adjacent to the Missouri River.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii-Bouteloua gracilis-Carex filifolia	M	Poa spp., Bromus spp.	2,3
Artemisia cana/Pascopyrum smithii	LP		
Fraxinus pennsylvanica-Ulmus americana	LP		
Schizachyrium scoparium-Bouteloua spp.	SP		

**Polygon Natural Community Classification:**

**Primary:** Pascopyrum smithii-Bouteloua gracilis--Carex filifolia

**Secondary:** Artemisia cana/Pascopyrum smithii

**Ownership Classification:** 4

**Exotic Comments:** Infestation levels of *Bromus* species appear extremely high throughout much of the polygon.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 3

**Survey Intensity Comments:** Completed good geographic coverage of the polygon using standard sampling technique.

**Outstanding Sites:** None

## REA Summary Form

**Polygon Number:** 153 (SD)

### **Polygon Description:**

The South Fork Grand River flows through the polygon. Mid- and upper-slopes are dominated by the *Stipa comata-Bouteloua gracilis-Carex filifolia* natural community. Proceeding down slope, *Artemisia cana* begins to intersperse with the *Stipa comata* prairie. *Pascopyrum smithii* density also increases down slope and may exist with *Artemisia cana*. Wide ravine and drainage floodplain regions often display the *Artemisia cana/Pascopyrum smithii* natural community. Equally as likely, no silver sage may occur and the floodplain exhibits the *Pascopyrum smithii-Bouteloua gracilis* community. Terraces adjacent to the river are identified by the *Calamovilfa longifolia-Pascopyrum smithii* association. *Shepherdia argentea* often is located on steep banks adjacent to the river in addition to drainages throughout the watershed. Shrubby ravines may also consist of large tracts of *Symphoricarpos occidentalis*. Woody draws are forested with *Fraxinus pennsylvanica*, *Populus deltoides*, and other hardwoods. Cottonwood and other woody species are extremely sporadic along the South Fork Grand River.

### **Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Stipa comata-Bouteloua gracilis-Carex filifolia	M	Brte, Agcr, Meof	2,3,2
Pascopyrum smithii-Bouteloua gracilis-Carex filifolia	LP		
Artemisia cana/Stipa comata	LP	Brte	2
Artemisia cana/Pascopyrum smithii	LP	Brte	2
Calamovilfa longifolia-Pascopyrum smithii	LP		
Populus deltoides-Fraxinus pennsylvanica Lowland Forest	LP		
Shepherdia argentea Shrubland	SP		
Spartina pectinata-Calamagrostis stricta-Carex spp.	SP		
Symphoricarpos occidentalis Shrubland	SP		
Scirpus tabernaemontani Herbaceous Vegetation	SP		
Eleocharis palustris Herbaceous Vegetation	SP		
Distichlis spicata - Hordeum jubatum	SP		
Scirpus maritimus Herbaceous Vegetation	SP		

### **Polygon Natural Community Classification:**

**Primary:** *Stipa comata-Bouteloua gracilis-Carex filifolia*

**Secondary:** *Pascopyrum smithii-Bouteloua gracilis-Carex filifolia*

**Ownership Classification:** 4

**Exotic Comments:** Infestation levels vary from low to moderate, although regions of severe *Agropyron cristatum* levels do occur. Most native species are displaced by crested wheatgrass in these regions.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 1

**Preliminary Conservation Significance Rating:** 3

**Survey Intensity Comments:** Completed good geographic coverage of the polygon using standard sampling technique.

**Outstanding Sites:** None

**REA Summary Form**

**Polygon Number:** 154 (SD)

**Polygon Description:**

The South Fork Grand River flows through the polygon. Mid- and upper-slopes are dominated by the *Stipa comata-Bouteloua gracilis-Carex filifolia* natural community. Much of the native prairie is infested with *Agropyron cristatum*, resulting in the displacement of many native prairie species. Species diversity appeared to be very low on sites closely examined. Unlike immediate polygons to the west (153 and 157), no *Artemisia cana/Pascopyrum smithii* community was observed along the South Fork Grand River. *Calamovilfa longifolia* and very scattered *Populus deltoides* woodlands dominated the floodplain region. Regeneration in woodlands was minimal. Large *Calamovilfa longifolia* patches were observed on upland prairie tracts as well.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Stipa comata-Bouteloua gracilis-Carex filifolia	M	Brte, Agcr, Meof	3,3,2
Populus deltoides/Symphoricarpos occidentalis	SP	Brin	2
Calamovilfa longifolia Herbaceous Vegetation	SP		
Spartina pectinata - Calamagrostis stricta - Carex spp.	SP		

**Polygon Natural Community Classification:**

**Primary:** Stipa comata/Bouteloua gracilis/Carex filifolia  
**Secondary:**

**Ownership Classification:** 2

**Exotic Comments:** Extremely high levels of crested wheatgrass, particularly on the Grand River National Grassland.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 1

**Preliminary Conservation Significance Rating:** 3

**Survey Intensity Comments:** Completed good geographic coverage of the polygon using standard sampling technique.

**Outstanding Sites:** None

## REA Summary Form

**Polygon Number:** 155 (SD)

### **Polygon Description:**

Mid- and upper slopes of this rolling *Pascopyrum smithii*-*Bouteloua gracilis* prairie were vegetated with much *Schizachyrium scoparium* and *Yucca glauca*. Shrub inclusions of *Rhus trilobata*, *Symphoricarpos occidentalis*, and *Prunus pumilla* occurred sporadically. Low-lying drainage regions were dominated by *Fraxinus pennsylvanica* and *Quercus macrocarpa*, but additionally contained *Populus deltoides* and *Acer negundo*. Floodplain terraces of creeks supported the *Artemisia cana*/*Pascopyrum smithii* natural community. A newly observed oak "savanna" type community was observed. Widely scattered *Quercus macrocarpa* trees with a *Pascopyrum smithii* understory defined this community. Denser stands of *Quercus macrocarpa* occurred in draws. Some fragmentation from crop and hay land has occurred in this polygon, but, in general, many large patches of native grassland remains.

### **Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii-Bouteloua gracilis-Carex filifolia	M	Agcr, Brte	3,2
Artemisia cana/Pascopyrum smithii	LP	Agcr	3
(Populus deltoides/Fraxinus pennsylvanica Lowland Forest)	LP	Agcr, Brin	3,2
(Quercus macrocarpa/Pascopyrum smithii)	LP		
Schizachyrium scoparium-Bouteloua spp.	SP		

### **Polygon Natural Community Classification:**

**Primary:** Pascopyrum smithii-Bouteloua gracilis-Carex filifolia

**Secondary:** Artemisia cana/Pascopyrum smithii

**Ownership Classification:** 4

**Exotic Comments:** Many native prairie areas have been converted to *Agropyron cristatum*.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 3

**Survey Intensity Comments:** Completed good geographic coverage of the polygon using standard sampling technique.

**Outstanding Sites:** None

## REA Summary Form

**Polygon Number:** 156 (MT)

**Polygon Description:**

The Montana portion of this polygon is bounded by the Little Missouri River on the southeast, Boxelder Creek to the northwest and Tie and Catamount Creeks to the northeast. Landscapes are generally characterized by rolling plains, low hills and elongate, low, shale ridges; this area is known colloquially as the Pierre Shale Plains. Some of the elongate ridges terminate in low rise buttes known as the Flattops. There are also buttes and chimney rocks projecting more than 400 feet. above surrounding uplands, as well as, highly eroded badlands that are set in more highly dissected terrain than prevails for the polygon as a whole. Elevations range from 3,180 to 4,050 feet. Parent materials are a combination of shales, mostly Cretaceous Pierre Shale, (including significant deposits of bentonite, a montmorillinitic clay derived from volcanic ash) and siltstones with a lesser amount of sandstone (usually on higher terrain). Shales and siltstones weather to heavy-textured, alkali-rich, and erosion prone Entisols and Aridisols with slow infiltration rates. These soil properties necessitate, according to the objectives of range managers to produce more forage, contour furrowing. These heavy soils support, for the most part, the same dominant plant communities as seen to the northwest or west (*Artemisia tridentata* ssp. *wyomingensis*/*Elymus lanceolatus* var. *lanceolatus* and *Elymus lanceolatus* var. *lanceolatus*-*Bouteloua gracilis*) but the cover is more sparse and particular community types associated with heavy, salt-affected soils are present, such as *Atriplex gardneri*/*Elymus lanceolatus*, *Puccinellia nuttalliana* flats, and *Eriogonum pauciflorum* barrens. The two major drainages, technically outside the polygon because of extensive agricultural development, are lined in places with highly-altered *Populus deltoides*- and *Fraxinus pennsylvanica*-dominated floodplain and riparian forests.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Eriogonum pauciflorum barrens-mudflats	LP		
Elymus lanceolatus var. lanceolatus-Bouteloua gracilis	LP		
Elymus lanceolatus var. lanceolatus-Nasella viridula	LP		
Poa juncifolia salt-affected flats	SP		
Puccinellia nuttalliana salt-affected flats	SP		
Distichlis spicata var. stricta	SP-LP		
Nasella viridula	SP		
Artemisia tridentata ssp. wyomingensis/Opuntia polyacantha	SP		
A. tridentata ssp. wyomingensis/E. lanceolatus-B. gracilis	LP-M		
A. tridentata ssp. wyomingensis/E. lanceolatus-N. viridula	SP-LP		
Artemisia cana/E. lanceolatus var. lanceolatus	SP-LP		
Atriplex gardneri dwarf shrubland	LP		
Atriplex gardneri/Elymus lanceolatus var. lanceolatus	LP-SP		
Chrysothamnus nauseosus/E. lanceolatus var. lanceolatus	LP		
mud mounds	LP		
Calamovilfa longifolia-Carex inops var. heliophila	SP (sandy substr.)		
Calamovilfa longifolia-Elymus lanceolatus var. lanceolatus	M (sandy substr.)		
Juncus balticus-Carex praegracilis	SP		
Eleocharis palustris	SP		
Typha latifolia	SP		
Spartina pectinatus	SP		
Scirpus validus	SP		
Carex nebrascensis	SP		
Gutierrezia sarothrae/Elymus lanceolatus var. lanceolatus	LP-M		
Gutierrezia sarothrae/Eriogonum pauciflorum	SP		
Salix exigua	SP		
Sarcobatus vermiculatus/Elymus lanceolatus var. lanceolatus	LP		

Sarcobatus vermiculatus/A. tridentata ssp. wyomingensis	M-LP
Atriplex suckleyi bentonite ourcrops and mudflats	SP
Juniperus scopulorum/Artemisia tridentata ssp. wyomingensis	SP
Pinus ponderosa-Quercus macrocarpa	SP
Populus deltoides alliance	LP
P.. deltoides/Symphoricarpos occidentalis	SP
Acer negundo/Symphoricarpos occidentalis	LP-SP
Acer negundo/Prunus virginiana	SP

**Polygon Natural Community Classification:**

**Primary:** Artemisia tridentata ssp. wyomingensis/E. lanceolatus-B. gracilis  
**Secondary:** Elymus lanceolatus var. lanceolatus-Bouteloua gracilis

**Ownership Classification: 2**

**Exotic Comments:** *Bromus japonicus* and *B. tectorum* are major weeds in all *Artemisia tridentata* ssp. *wyomingensis*-, *A. cana*- and *Sarcobatus vermiculatus*- dominated shrublands and all but the most highly salt-affected grasslands. *Poa pratensis* is a major component of most *A. cana* stands and has the capacity to be invasive in all communities with equivalent or greater moisture status. *Bromus inermis* is a common roadside planting that is escaping to fields, establishing in small patches and increasing centrifugally.

**Land-use Disturbance Rating: 2**

**Land-use Disturbance Comments:** Bentonite is mined in the southern-most portion of polygon and to the north contour furrowing, to improve internal soil drainage and increase grass production, has been instituted on a massive scale.

**Cropland Conversion Rating: 3**

**Preliminary Conservation Significance Rating: 1**

**Survey Intensity Comments:** Very complete coverage, at a much higher density of points than directed by REA. All portions of polygon were inventoried, except those more than 2 miles removed from nearest road.

**Outstanding Sites:** A large BLM allotment(s) centering on the Middle Fork of Cottonwood Creek (T 07S, R 58E, S 17 and to the northwest thereof) has not been grazed (only wildlife) for 12-15 yrs and is in good condition with weed infestations at a minimum and broad spectrum of communities represented. This BLM country stretches toward the Flattops, encompassing most of the headwaters of Cottonwood Creek, and is quite remote (although roaded, most are old and not accessible because they have washed-out at lower steam crossings). This area should be thoroughly inventoried at earliest possible convenience.

**REA Summary Form**

**Polygon Number:** 157 (SD)

**Polygon Description:** [See Survey Intensity Comments below.]

Polygon appeared very similar to polygon 153 directly to the west. Public access was severely limited. Natural communities listed below are identical to 153 (see polygon description for 153), and founded on only one sample point on the far west boundary of the polygon. Central and eastern natural communities may vary significantly.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Stipa comata-Bouteloua gracilis-Carex filifolia	M	Brte, Agcr, Meof	3,3,3
Pascopyrum smithii-Bouteloua gracilis-Carex filifolia	LP		
Artemisia cana/Stipa comata	LP		
Artemisia cana/Pascopyrum smithii	LP		
Calamovilfa longifolia-Pascopyrum smithii	LP		
(Populus deltoides/Fraxinus pennsylvanica Lowland Forest)	LP		
Shepherdia argentea Shrubland	SP		
Spartina pectinata-Calamagrostis stricta-Carex spp.	SP		
Symphoricarpos occidentalis Shrubland	SP		
Scirpus tabernaemontani Herbaceous Vegetation	SP		
Eleocharis palustris Herbaceous Vegetation	SP		
Distichlis spicata-Hordeum jubatum	SP		
Scirpus maritimus Herbaceous Vegetation	SP		

**Polygon Natural Community Classification:**

**Primary:** Stipa comata-Bouteloua gracilis-Carex filifolia

**Secondary:**

**Ownership Classification:** 4

**Exotic Comments:** Infestation levels determined from one point of access on far western boundary. Regions of severe *Agropyron cristatum* and *Melilotus officinalis* infestation do occur. Most native species are displaced by crested wheatgrass in these regions.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 1

**Preliminary Conservation Significance Rating:** 3

**Survey Intensity Comments:** Very poor geographic coverage of the polygon using standard sampling technique. Only one public access road available at extreme western boundary for very short distance.

**Outstanding Sites:** None

## REA Summary Form

**Polygon Number:** 158 (SD)

**Polygon Description:**

The *Pascopyrum smithii*-*Bouteloua gracilis* natural community dominates on lower and mid-slopes of polygon 158. Upper slopes, ridgetops, and prairie expanses west of High Bank Creek support the *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* community. *Artemisia cana* in association with *Pascopyrum smithii* is found on many floodplain terraces. Prairie adjacent to the Little Moreau River is vegetated by the *Pascopyrum smithii* Clay Pan Herbaceous Vegetation community. Shale barrens occur throughout the prairies but are more prevalent on the eastern portion. Wider prairie swales are vegetated by *Spartina pectinata*, *Distichlis spicata*, *Hordeum jubatum* and *Suaeda depressa*. Green ash and cottonwood dominate most wooded ravines. Draws in the High Bank Creek region are an exception. Oak dominates in upland ravines of this area with an understory of chokecherry. Badlands occur sporadically, but are most prevalent on the western portion of the polygon. High Bank Creek has floodplain terraces vegetated by an oak overstory with *Symphoricarpos occidentalis* in the understory. Species diversity in the understory appears to be very high in this area. Additionally, the upland prairie adjacent to High Bank Creek contains the most exceptional prairie dog colony viewed in all areas traversed for REA sampling in South Dakota. The colony extends for over three miles of roadway with active dens on both sides. Prairie dogs freely cross the road. Missouri River hills located on the far eastern edge of the polygon supported a new community. A shrub oak canopy dominated by multi-stemmed oak less than 2 meters in height occurred over a big and little bluestem graminoid layer. Further plot work could reveal much information about this community.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii-Bouteloua gracilis-Carex filifolia	M	Brte	2
Stipa comata-Bouteloua gracilis-Carex filifolia	M	Brte	1
Artemisia cana/Pascopyrum smithii	M		
Pascopyrum smithii Clay Pan Herbaceous Vegetation	M		
Inland shale barren slopes	SP		
Populus deltoides-Fraxinus pennsylvanica Lowland Forest	LP		
Schizachyrium scoparium-Bouteloua spp.	LP		
Eroding Great Plains Badlands	LP		
Quercus macrocarpa/Prunus virginiana	LP		
(Quercus macrocarpa/Andropogon gerardii/Schizachyrium scoparium shrubland)	LP		
(Quercus macrocarpa Floodplain Forest)	LP		
Distichlis spicata-Hordeum jubatum	SP		
Spartina pectinata-Calamagrostis stricta-Carex spp.	SP		
Scirpus maritimus Herbaceous Vegetation	SP		
Salix exigua Shrubland	SP		

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Bouteloua gracilis*-*Carex filifolia*  
**Secondary:** *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia*

**Ownership Classification:** 3

**Exotic Comments:** Infestation levels were low to moderate throughout the polygon, but some exceptional areas were identified with trace to low levels.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 2

**Survey Intensity Comments:** Completed good geographic coverage of the polygon using standard sampling technique.

**Outstanding Sites:** High Bank Creek and prairie dog colony.

## REA Summary Form

**Polygon Number:** 159 (Wyo)

**Polygon Description:**

This polygon contains plateaus of sandstone and shale capped with scoria (porcellanite), dissected by streams that form narrow to broad valleys with steep, rocky slopes. The gently-rolling tops of the plateaus and the valley bottoms are vegetated with a mix of grassland types, primarily the *Pascopyrum smithii*-*Bouteloua gracilis*/*Carex filifolia* association and the *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* association. *Artemisia tridentata* ssp. *wyomingensis* contributes 10%-25% canopy cover throughout the grasslands, except in a prairie-dog town, where sagebrush is absent. The sagebrush is dense enough (>25% canopy cover) in patches within the matrix grasslands to constitute stands of the *Artemisia tridentata* ssp. *wyomingensis*/Mixed Grass association (with *Pascopyrum smithii* and *Bouteloua gracilis* co-dominating the herbaceous layer). The *Pascopyrum smithii*-*Nasella viridula* association, with 10%-25% canopy cover of *Artemisia tridentata* ssp. *wyomingensis*, forms patches in draws and on flats. Also present in the grassland matrix are small patches of *Calamovilfa longifolia* grass vegetation, probably of the *C. longifolia*-*Stipa comata* association. *Pinus ponderosa* woodlands (principally of the *P. ponderosa*/*Schizachyrium scoparium* association) cover a substantial part of the polygon, forming part of a mosaic on sandstone and scoria hillsides. Other vegetation types in the mosaic are *Schizachyrium scoparium* bunchgrass vegetation (probably the *S. scoparium*-*Bouteloua* spp.-*Carex filifolia* association), *Juniperus scopulorum* woodlands (perhaps of the *J. scopulorum*/*Schizachyrium scoparium* association), and sparsely-vegetated scoria slopes. The larger streams support *Populus deltoides* woodlands (probably the *P. deltoides*/*Pascopyrum smithii* association and the *P. deltoides*/*Symphoricarpos occidentalis* association) and *Spartina pectinata* grass stands, and woody draws contain patches of *Acer negundo* woodland with *Symphoricarpos occidentalis* in the understory (perhaps degraded stands of the *A. negundo*/*Prunus virginiana* association). Large hay meadows have been planted in the larger stream valleys and on relatively flat parts of the uplands.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pinus ponderosa/Schizachyrium scoparium?	LP-M		
Pascopyrum smithii-Bouteloua gracilis/Carex filifolia	LP-M	Brja	2?
Stipa comata-Bouteloua gracilis-Carex filifolia	SP-LP-M	Brja	2?
Schizachyrium scoparium-Bouteloua spp. Carex filifolia?	SP-LP		
Acer negundo/Prunus virginiana?	SP		
Calamovilfa longifolia-Stipa comata?	SP-LP		
Spartina pectinata	SP		
Pinus ponderosa/Pascopyrum smithii?	LP		
Symphoricarpos occidentalis?	SP		
Juniperus scopulorum/Schizachyrium scoparium?	SP		
Artemisia tridentata ssp. wyomingensis/Mixed Grass	SP	Brja	2?
Pascopyrum smithii-Nasella viridula	SP	Brja	3?
Populus deltoides/Pascopyrum smithii	LP		
Populus deltoides/Symphoricarpos occidentalis?	SP		

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Bouteloua gracilis*/*Carex filifolia* with *Artemisia tridentata* ssp. *wyomingensis*  
**Secondary:** *Pinus ponderosa*/*Schizachyrium scoparium*

**Ownership Classification:** 4

**Exotic Comments:** Biennial brome grasses (especially *Bromus japonicus*) are common throughout the grasslands, and co-dominate in swales and on flats.

**Land-use Disturbance Rating:** 2?

**Land-use Disturbance Comments:** Oil fields are present in the eastern and southwestern parts of the polygon.

**Cropland Conversion Rating:** 2?

**Preliminary Conservation Significance Rating:** 2?

**Survey Intensity Comments:** A modified rapid ecological survey (driving stretches of public roads and recording the distribution and abundance of vegetation types and exotic plants) was conducted in the northeastern part of the polygon. Most of the polygon was not surveyed. Identity of the woodlands and grass vegetation on the hills and in the riparian zones is uncertain because no sites were found for on-the-ground survey.

**Outstanding Sites:** None known at present.

**AREAS NEEDING ADDITIONAL INVESTIGATION:**

The western part of the polygon (T57N&58N, R74&75W) may contain a site that represents the mosaic of hillside woodlands and bunchgrass stands, and woodlands and shrublands of the woody draws. The larger stream valleys and the broad uplands in the polygon are likely to contain large patches of agricultural land.

## REA Summary Form

**Polygon Number:** 164 (MT)

**Polygon Description:**

The western boundary of polygon 164 is the Little Powder River floodplain, the southern boundary is Ranch Creek, the northern is East Fork of Little Powder River, and the eastern boundary cannot be tied to landscape features. The eastern portion of this polygon is comprised of a dissected to highly-dissected and broken topography; areas with gravel and scoria-capping produce steep-relief eroded buttes and hillocks often surrounded by salt-affected clay flats (mudflats). Much of the higher elevation terrain is underlain by sandstone that produces steep, and slumping south-facing escarpments. Elevations range from 3,600 to 4,100 feet. The prevalence of sandstone probably results in the dominance of open *Pinus ponderosa* and *Juniperus scopulorum* forest at higher elevations. Areas with less available moisture support *P. ponderosa* savanna or the somewhat anomalous condition of *Artemisia cana* dominating upslope, as well as, terrace and floodplain situations. *Artemisia tridentata* ssp. *wyomingensis*- and *Elymus lanceolatus* var. *lanceolatus* dominate various lower elevation communities (with soils developed primarily from shales and siltstones and classed as Torriorthents, Camborthids and Natrargids). The combination of the two associations produces the most prevalent community type (*A. tridentata* ssp. *wyomingensis*/*E. lanceolatus*). Catastrophic fires that burned pinelands in 1990 were probably outside the range of natural variability. The above description and following list of communities is based on cursory reconnaissance of only the eastern 1/3 to 1/2 of the polygon.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Stipa comata-Carex filifolia	M-LP		
Elymus lanceolatus var. lanceolatus-Bouteloua gracilis	LP-M		
Schizachyrium scoparium-Carex filifolia	SP		
Artemisia cana-Elymus lanceolatus var. lanceolatus	LP		
A. tridentata ssp. wyomingensis/E.lanceolatus var. lanceolatus	M-LP		
Pinus ponderosa savanna	SP		
badlands (Eriogonum pauciflorus c.t. predominates)	LP		
Spartina pectinata	SP		
Scirpus pungens	SP		
Pinus ponderosa-Juniperus scopulorum	SP		
Pinus ponderosa/Pseudoroegneria spicata	SP		
Pinus ponderosa/Carex inops var. heliophila	SP-LP		
Fraxinus pennsylvanica-(Ulmus americana)/Prunus virginiana	SP		
F. pennsylvanica/Carex sprenglii?	SP		

**Polygon Natural Community Classification:**

**Primary:** *Artemisia tridentata* ssp. *wyomingensis*/*E.lanceolatus* var. *lanceolatus*  
**Secondary:** *Artemisia cana*-*Elymus lanceolatus* var. *lanceolatus*

**Ownership Classification:** 3

**Exotic Comments:** *Bromus japonicus* was especially prevalent this summer (1997) of sampling and infestation rates were so high that it must be a conspicuous component even in years with weather less favorable to annual exotics.

**Land-use Disturbance Rating:** 2

**Land-use Disturbance Comments:** Clearcutting and shelterwood harvesting is occurring on the more closed and not so closed ponderosa pine forests on private lands. An oil field is developed (or being developed) on the southern portion of the eastern third of the polygon and numerous distribution pipelines traverse this area.

**Cropland Conversion Rating:** 3

**Preliminary Conservation Significance Rating:** 2

**Survey Intensity Comments:** REA techniques used only in the eastern third of the polygon. From interpretation of aerial photography and landuse maps the western two thirds supports proportionately more *Artemisia tridentata* and *A. cana* dominated rangelands as opposed to ponderosa pine-dominated woodlands.

**Outstanding Sites:** Possible site at Ash Draw (T 85, R55 E, S 11) at headwaters of East Fork of Little Powder River; range conditions good to excellent on site where common community types associated with sandstone or comparable light-textured soils predominate (e.g. *Stipa comata*-*Carex filifolia*, *Artemisia cana*/*E. lanceolatus*, etc.).

## REA Summary Form

**Polygon Number:** 166 (SD)

### **Polygon Description:**

Mid- to lower slopes are dominated by the *Pascopyrum smithii*-*Bouteloua gracilis* plant community. Upper slopes and ridgetops support the *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* natural community. A little bluestem dominated community often occurs on upper regions as well. Floodplain terraces are vegetated by *Artemisia cana* with *Pascopyrum smithii* and often extend to lower and mid-slope prairie regions. *Artemisia cana* may continue its expansion up-slope grading into the *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia*. Eroding Great Plains Badlands jut upward throughout the polygon with their characteristic sparsely vegetated surfaces. *Spartina pectinata* occurs on the banks of the Moreau River, but the sparsely wooded floodplain supports a *Populus deltoides* canopy with an understory of *Calamovilfa longifolia*, whereas, more heavily-wooded tracts sporadically occurring along the river support a *Symphoricarpos occidentalis* understory. Floodplain terraces are vegetated by *Artemisia cana*. Extensive *Symphoricarpos occidentalis* shrublands may occur in wide drainage regions. *Distichlis spicata*, *Spartina pectinata*, *Scirpus tabernaemontanii*, and *Typha latifolia* occur in higher moisture retention areas. Much of the prairie occurring in the eastern half of this polygon is of higher quality.

### **Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii-Bouteloua gracilis	M	Brte	3
Stipa comata-Bouteloua gracilis-Carex filifolia	M	Brte	3
Artemisia cana/Pascopyrum smithii	LP		
Artemisia cana/Stipa comata	LP		
Inland Shale Barren Slopes	LP		
Populus deltoides-Fraxinus pennsylvanica Lowland Forest	LP		
(Populus deltoides/Calamovilfa longifolia)	LP		
Schizachyrium scoparium-Bouteloua spp.	SP		
Spartina pectinata-Calamagrostis stricta-Carex spp.	SP		
Bouteloua gracilis-Buchloe dactyloides	SP		
Symphoricarpos occidentalis Shrubland	SP		
Distichlis spicata-Hordeum jubatum	SP		
Typha latifolia Herbaceous Vegetation	SP		
Scirpus tabernaemontani Herbaceous Vegetation	SP		

### **Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Bouteloua gracilis*

**Secondary:** *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia*

**Ownership Classification:** 4

**Exotic Comments:** Much of polygon has high levels of exotic species infestation. Scattered regions of trace to low levels may be found but are sporadic in occurrence.

**Land-use Disturbance Rating:** 1

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 2

**Survey Intensity Comments:** Completed good geographic coverage of the polygon using standard sampling technique.

**Outstanding Sites:** Lime Creek.

## REA Summary Form

**Polygon Number:** 168 (MT)

**Polygon Description:**

The lesser Montana portion of what is a large polygon extending into South Dakota and Wyoming is wholly constituted of lands draining to the Little Missouri River. These eastern headwaters areas of Little Missouri River are gently rolling uplands with moderate to deeply incised drainages that become shallowly entrenched approaching the river's floodplains. Several minor extents of badland or highly dissected breakland terrain occur in marine shales. The majority of soils on lower lying terrain are heavy-textured, erosion prone, alkali-rich Entisols and Aridisols weathered from Cretaceous age Pierre, Mowry, and calcareous Niobrara Formation, and possess a mesic temperature regime, contrasting with frigid soils that occur farther north. Plant communities are dominated for the most part by varying combinations of *Artemisia tridentata* ssp. *wyomingensis*, *Elymus lanceolatus* var. *lanceolatus*, and *Bouteloua gracilis*. Poorly developed or eroding clay soils and bentonite deposits support community types having various permutations of *Atriplex gardneri* and *Eriogonum pauciflorum*. Higher points in the landscape tend to be underlain by sandstone and distinctive plant communities dominated by *Stipa comata* or *Calamovilfa longifolia*. These soils support most of the same plant associations occurring further to the northwest, but plant cover is more sparse.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Stipa comata</i> - <i>Carex filifolia</i>	M-SP	Brja, Meat, Brin	2,1,1
<i>Elymus lanceolatus</i> var. <i>lanceolatus</i> alluvial bottoms	SP-LP	Brja, Popr., Brin	3,3,1
<i>Elymus lanceolatus</i> var. <i>lanceolatus</i> - <i>Bouteloua gracilis</i>	M-LP		
<i>Elymus lanceolatus</i> var. <i>lanceolatus</i> - <i>Nasella viridula</i>	SP-LP	Brja, Popr	3,2
<i>Sarcobatus vermiculatus</i> / <i>Elymus lanceolatus</i> var. <i>lanceolatus</i>	LP	Meof, Agcr	2
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i> / <i>Carex filifolia</i>	SP		
<i>A. tridentata</i> ssp. <i>wyomingensis</i> / <i>E. lanceolatus</i> - <i>B. gracilis</i>	M-LP		
<i>A. tridentata</i> ssp. <i>wyomingensis</i> / <i>E. lanceolatus</i> - <i>Nasella viridula</i>	SP		
<i>Calamovilfa longifolia</i> - <i>Carex filifolia</i>	SP-LP		
<i>Calamovilfa longifolia</i> - <i>Carex inops</i> var. <i>heliophila</i>	SP		
<i>Atriplex gardneri</i>	SP-LP		
<i>Atriplex gardneri</i> / <i>E. lanceolatus</i> var. <i>lanceolatus</i>	SP-LP		
<i>Agropyron cristatum</i>	LP		

**Polygon Natural Community Classification:**

**Primary:** *Artemisia tridentata* ssp. *wyomingensis*/*E. lanceolatus* var. *lanceolatus*-*B. gracilis*

**Secondary:** *Stipa comata*-*Carex filifolia*

**Ownership Classification:** 2

**Exotic Comments:** *Bromus inermis*, *Melilotus officinalis*, and *Agropyron cristatum*, though not considered weeds are aggressive exotics in roadsides, burned native prairies, and volunteering from CRP land into native prairie. *Bromus japonicus* (and *B. tectorum*) have produced abundantly in this year with abundant late-spring/early-summer moisture and will continue to constitute an ever-increasing component of *Elymus lanceolatus* var. *lanceolatus*-dominated landscapes; the more productive the site the better these invaders seem to do.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** The soils here are generally unfavorable for crop production but range managers practice contour furrowing (turning of native prairie with gang-plows to improve infiltration and consequently grass production). There are no oil/gas fields and the only mineral is bentonite outcrops, but apparently not of exploitable extent.

**Cropland Conversion Rating:** 3

**Preliminary Conservation Significance Rating:** 2

**Survey Intensity Comments:** Inventory focused on public lands and easements however, many problems with getting landowner access to even BLM lands (allotments), not to mention access to private lands; sampling doubtless biased by access problems, with riparian and bottomland environments undersampled.

**Outstanding Sites:** There may be exemplary examples of wide-ranging community types and potential sites, as in badlands/eroded terrain for sensitive species but these areas are yet to be inventoried.

## REA Summary Form

**Polygon Number:** 168 (SD)

**Polygon Description:**

The western portion of polygon 168 is dominated by the *Pascopyrum smithii*-*Nasella viridula* natural community. Many drainage breaks slicing through the clay soil are vegetated by the *Artemisia cana*/*Pascopyrum smithii* association. Sparsely vegetated dark shale barrens, often with areas of chalcidony, were identified on much of the western portion of polygon 168. The small patch community dominated by *Atriplex gardneri* was identified on the barrens in addition to the *Sarcobatus vermiculatus*-*Atriplex gardneri* natural community. *Sarcobatus vermiculatus* occurred with *Pascopyrum smithii* on floodplain terraces. Low-lying prairie and wide drainage regions throughout the polygon are often vegetated by alkaline wet meadow species, including: *Distichlis spicata*, *Hordeum jubatum*, and *Suaeda depressa*. Pools of deeper water may be vegetated by *Scirpus tabernaemontani* and/or *Typha latifolia*. Much of the polygon lying further easterly supports the *Pascopyrum smithii* Clay Pan Herbaceous Vegetation community. Observed throughout both prairie types were scattered playas and their associated ephemeral vegetation. The *Populus deltoides*/*Symphoricarpos occidentalis* community was identified on floodplain terraces of Elm Creek and other waterways when sufficient canopy closure occurred.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Pascopyrum smithii</i> - <i>Nasella viridula</i>	M	Brte	1
<i>Artemisia tridentata</i> / <i>Pascopyrum smithii</i>	M		
<i>Pascopyrum smithii</i> Clay Pan Herbaceous Vegetation	M		
<i>Sarcobatus vermiculatus</i> / <i>Pascopyrum smithii</i>	LP		
<i>Artemisia cana</i> / <i>Pascopyrum smithii</i>	LP		
<i>Pascopyrum smithii</i> - <i>Bouteloua gracilis</i>	LP		
<i>Stipa comata</i> - <i>Bouteloua gracilis</i> - <i>Carex filifolia</i>	LP		
Inland Shale Barren Slopes	LP		
<i>Sarcobatus vermiculatus</i> - <i>Atriplex gardneri</i>	LP		
<i>Spartina pectinata</i> - <i>Calamagrostis stricta</i> - <i>Carex</i> spp.	SP		
<i>Scirpus tabernaemontani</i> Herbaceous Vegetation	SP		
<i>Typha latifolia</i> Herbaceous Vegetation	SP		
<i>Distichlis spicata</i> - <i>Hordeum jubatum</i>	SP		
<i>Atriplex gardneri</i> Dwarf Shrubland	SP		

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Nasella viridula*

**Secondary:** *Pascopyrum smithii* Clay Pan Herbaceous Vegetation

**Ownership Classification:** 4

**Exotic Comments:** Much of polygon has low levels of exotic species infestation.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** Missile sites - some active

**Cropland Conversion Rating:** 3

**Preliminary Conservation Significance Rating:** 1

**Survey Intensity Comments:** Completed good geographic coverage of the south and west portions of polygon using standard sampling technique.

**Outstanding Sites:** Plot work is needed on prairie north of Belle Fourche.

## REA Summary Form

**Polygon Number:** 169 (SD/WY)

**Polygon Description:**

The *Artemisia tridentata*/*Carex filifolia* community is dominant on the majority of polygon 169. Upper slopes often support the *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* association. Drainage regions throughout have *Sarcobatus vermiculatus* and/or *Artemisia cana* occurring with *Pascopyrum smithii*. The *Sarcobatus vermiculatus*/*Pascopyrum smithii* association may be extensively dominant in regions, for example Greasewood Creek. Often this association is very weedy with high levels of cheatgrass. Most drainage areas are not dominated by a wooded canopy. Scattered *Populus deltoides*, *Acer negundo*, and *Fraxinus pennsylvanica* often occur but at less than 20 percent canopy closure. Exceptions do occur, for example Lightning Creek, but they are few and scattered. *Salix exigua* shrublands were identified quite often in higher moisture regimes. The Hat Creek coniferous vegetation includes *Juniperus scopulorum* and *Pinus ponderosa* woodlands, and very scattered *Pinus ponderosa*/*Prunus virginiana* forest patches on northerly-aspects. Oil and gas exploration and extraction occurs in polygon 169. The oil field on Miller's Loop is quite extensive and includes some outstanding badlands. Prairie regions are highly degraded in this area by cheatgrass.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Artemisia tridentata</i> / <i>Carex filifolia</i>	M	Brte	2
<i>Stipa comata</i> - <i>Bouteloua gracilis</i> - <i>Carex filifolia</i>	M	Brte	2
<i>Artemisia cana</i> / <i>Stipa comata</i>	M		
<i>Artemisia cana</i> / <i>Pascopyrum smithii</i>	LP		
<i>Artemisia tridentata</i> / <i>Bouteloua gracilis</i>	LP		
<i>Artemisia cana</i> / <i>Calamovilfa longifolia</i>	LP		
<i>Sarcobatus vermiculatus</i> / <i>Pascopyrum smithii</i>	LP		
( <i>Populus deltoides</i> / <i>Pascopyrum smithii</i> )	LP		
<i>Juniperus scopulorum</i> Woodland	LP		
<i>Pinus ponderosa</i> / <i>Schizachrium scoparium</i>	LP		
Eroding Great Plains Badlands	LP		
( <i>Populus deltoides</i> / <i>Salix exigua</i> Floodplain Woodland)	LP		
( <i>Fraxinus pennsylvanica</i> - <i>Acer negundo</i> Woodland)	SP		
<i>Pascopyrum smithii</i> / <i>Nasella viridula</i>	SP		
<i>Pinus ponderosa</i> / <i>Prunus virginiana</i>	SP		
<i>Salix exigua</i> Shrubland	SP		
<i>Typha latifolia</i> Herbaceous Vegetation	SP		

**Polygon Natural Community Classification:**

**Primary:** *Artemisia tridentata*/*Carex filifolia*  
**Secondary:** *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia*

**Ownership Classification:** 3

**Exotic Comments:** Infestation levels were moderate to high throughout the polygon with some exceptional areas of extremely high levels present. Some areas of trace to low areas were also identified.

**Land-use Disturbance Rating:** 2 (Niobrara County only)

**Land-use Disturbance Comments:** Oil and gas exploration and extraction. Rating may increase to "3" if other regions of polygon 169 were encompassed.

**Cropland Conversion Rating: 3**

**Preliminary Conservation Significance Rating: 2**

**Survey Intensity Comments:** Completed good geographic coverage of the polygon in Niobrara county using standard sampling technique.

**Outstanding Sites:** Cedar Breaks prairie.

## REA Summary Form

**Polygon Number:** 169a (Wyo)

**Polygon Description:**

This polygon consist primarily of rolling plains with broad stream valleys. The southeastern portion includes hills formed in dipping sandstone beds, and a series of escarpments runs north-south along the eastern edge. The northwestern part has little relief and contains numerous playas. Geologic substrates are inter-bedded shales and sandstones that have weathered to produce a fine-grained mosaic of soils of different textures. The matrix vegetation in most of the polygon is grassland of the *Pascopyrum smithii*-*Bouteloua gracilis*/*Carex filifolia* association. In the south-central part of the polygon, the matrix vegetation is grassland of the *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* association. Both types of matrix grassland contain *Artemisia tridentata* ssp. *wyomingensis* with canopy cover from 1% to ca. 20%, and patches of sagebrush shrubland are present throughout both types. In the southeastern corner, *A. tridentata* ssp. *wyomingensis* is dense enough (over 25% canopy cover) that the matrix vegetation is a shrub type (*Artemisia tridentata* ssp. *wyomingensis*/Mixed Grass, with *Pascopyrum smithii* and *Bouteloua gracilis* as the dominant grasses). Scattered throughout the matrix vegetation in all but the northwestern part of the polygon are small patches of *Yucca glauca*/*Calamovilfa longifolia* vegetation. In the northwestern part, the matrix contains patches of *Pascopyrum smithii*-*Eleocharis* spp. grassland in the playas. *Populus deltoides* woodlands occur along the larger streams, and *Sarcobatus vermiculatus* shrub vegetation occurs in some valleys. Draws contain patches of *Pascopyrum smithii*-*Nasella viridula* grass vegetation. The escarpments support a mosaic of ponderosa pine woodlands, sparse shrub vegetation (probably of the *Chrysothamnus nauseosus*/*Pseudoroegneria spicata* association), and barren clay slopes. Large patches of crested wheatgrass meadows, most of which appear on the land cover map, are common throughout the polygon.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Pascopyrum smithii</i> - <i>Bouteloua gracilis</i> / <i>Carex filifolia</i>	SP-LP-M <sup>1</sup>	Brja,Brte	2
<i>Stipa comata</i> - <i>Bouteloua gracilis</i> - <i>Carex filifolia</i>	SP-LP-M <sup>2</sup>	Brja,Brte	2
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i> /Mixed Grass	SP-M	Brja,Brte	2?
<i>Populus deltoides</i> / <i>Pascopyrum smithii</i>	SP-LP	Brja,Ciar	2
<i>Yucca glauca</i> / <i>Calamovilfa longifolia</i>	SP		
<i>Pascopyrum smithii</i> - <i>Eleocharis</i> spp.	SP		
( <i>Artemisia tridentata</i> ssp. <i>wyomingensis</i> / <i>Stipa comata</i> - <i>Bouteloua gracilis</i> )	SP-M <sup>3</sup>	Brja,Brte	2
<i>Sarcobatus vermiculatus</i> / <i>Pascopyrum smithii</i>	LP	Brja,Brte	2?
<i>Pinus ponderosa</i> / <i>Schizachyrium scoparium</i>	SP-LP		
<i>Pinus ponderosa</i> / <i>Juniperus scopulorum</i>	SP		
<i>Artemisia cana</i> ssp. <i>cana</i> / <i>Pascopyrum smithii</i>	SP-LP	Brja	2?
<i>Scirpus pungens</i> herbaceous vegetation	SP		
( <i>Populus deltoides</i> / <i>Calamovilfa longifolia</i> )?	LP		
<i>Artemisia nova</i> Dwarf shrubland	SP	Brja,Ciar	2?
<i>Chrysothamnus nauseosus</i> / <i>Pseudoroegneria spicata</i> ?	SP		

<sup>1</sup> Matrix throughout most of the polygon; large patch in the south-central part.

<sup>2</sup> Matrix in the south-central part of the polygon; large patch throughout most of the polygon

<sup>3</sup> Matrix in a limited area in the southeastern portion of the polygon; small patch elsewhere

<sup>4</sup> The identity of the *Pinus ponderosa* stands in the southeastern part of the polygon is unknown; stands in the central part are probably this association.

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Bouteloua gracilis*/*Carex filifolia* with *Artemisia tridentata* ssp. *wyomingensis*

**Secondary:** *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* with *Artemisia tridentata* ssp. *wyomingensis*

**Ownership Classification: 3.**

**Exotic Comments:** Biennial brome grasses (*Bromus japonicus* and *B. tectorum*) are common throughout, and contribute substantial cover to the matrix vegetation and the vegetation of draws (*Pascopyrum smithii*-*Nassella viridula*, *Sarcobatus vermiculatus*/*Pascopyrum smithii*). In all types, these grasses dominate patches up to several hundred square meters each. Canada thistle (*Cirsium arvense*) is present and may be common in the riparian vegetation.

**Land-use Disturbance Rating: 3.**

**Land-use Disturbance Comments:** Oil fields are scattered throughout the southern 2/3 of the polygon. In most fields, the wells and related facilities are only moderately dense.

**Cropland Conversion Rating: 2?**

**Preliminary Conservation Significance Rating: 2?**

**Survey Intensity Comments:** Geographic coverage of the polygon was good, using a modified rapid ecological assessment that consisted of driving stretches of public roads and noting the distribution and abundance of vegetation types and exotic plants. The identity of the vegetation types is somewhat uncertain because few accessible public lands were located on which to do on-the-ground checking of the vegetation.

**Outstanding Sites:**

1. Downs potential Research Natural Area, T37N, R68W. Ecological evaluation by Wyoming Natural Diversity Database is in progress for the USDA Forest Service, as part of Thunder Basin National Grassland plan revision. Contains examples of the *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* association, *Pascopyrum smithii*-*Bouteloua gracilis*/*Carex filifolia* association, sparse shrublands of escarpment. See also biodiversity report for Thunder Basin National Grassland (Byer et al. 1992, pp. 108-9, 156)
2. Meadow Creek potential Research Natural Area, T38N, R68W & R69W. Ecological evaluation completed by Wyoming Natural Diversity Database for the USDA Forest Service, as part of Thunder Basin National Grassland plan revision. Contains examples of *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* association, *Pascopyrum smithii*-*Bouteloua gracilis*/*Carex filifolia* association, *Sarcobatus vermiculatus* shrub vegetation, *Pinus ponderosa*/*Schizachyrium scoparium* association.
3. Cow Creek Buttes inventoried semi-primitive area (ISPM), T38N, R67W. Identified by USDA Forest Service in biodiversity report for Thunder Basin National Grassland (Byer et al. 1992, pp. 108-9, 156) because it contains ponderosa pine woodlands and juniper (*Juniperus scopulorum*) woodlands on scoria (poreclanite) outcrops, and several shrub and grass vegetation types (not specified)
4. Miller Hills inventoried semi-primitive area (ISPM), T39N, R67W & R68W. Identified by USDA Forest Service in biodiversity report for Thunder Basin National Grassland (Byer et al. 1992, pp. 108-9, 154) because it contains ponderosa pine woodlands on scoria (poreclanite) outcrops, and several shrub and grass vegetation types (not specified).

**AREAS NEEDING FURTHER INVESTIGATION:**

1. The Lightning Creek and Dry Creek drainages along the eastern edge of the polygon (T36N, R68&69W; T37N, R67-69W), and extending eastward into the adjacent polygon, may contain large sites that represent the mosaic of plant associations typical of interbedded sandstones and shales, as well as *Populus deltoides* woodlands and other plains riparian associations. (This area contains the Downs potential research natural area).

**REA Summary Form**

**Polygon Number:** 169b (Wyo)

**Polygon Description:**

This polygon consists of gently-rolling hills with numerous intermittent or ephemeral stream valleys. The geologic substrate in most of the central and western parts of the polygon is stabilized sand dunes, with inter-bedded shales and sandstones in ca. the eastern 1/3 and along the western edge. Playas containing alkaline "soda" lakes are present in the southern part. The matrix vegetation throughout is grassland with either *Artemisia tridentata* ssp. *wyomingensis* or *A. cana* ssp. *cana*. On the stabilized sand dunes, this matrix grassland belongs to the *Calamovilfa longifolia*-*Carex filifolia* association or the *C. longifolia*-*Stipa comata* association. *Artemisia cana* ssp. *cana* is dense enough in large patches (primarily in swales and draws) to form stands of the *A. cana* ssp. *cana*/*Calamovilfa longifolia* association. The *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* association (with *A. cana* ssp. *cana*) occurs as patches on ridges of dunes and forms the matrix on soils derived from sandstones in the eastern part of the polygon and along the western edge. Finer-textured soils support stands of the *Artemisia pedatifida*/*Pascopyrum smithii* association, which constitutes the matrix in valleys along the eastern edge; the *Artemisia tridentata* ssp. *wyomingensis*/Mixed Grass association (with *Pascopyrum smithii* and *Bouteloua gracilis* as dominant species) in draws; the *Pascopyrum smithii*-*Nasella viridula* association (with *Artemisia tridentata* ssp. *wyomingensis*) and the *Artemisia tridentata* ssp. *wyomingensis*/*Pascopyrum smithii* association in draws; and the *Sarcobatus vermiculatus*/*Pascopyrum smithii* association on shales along the western edge.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Calamovilfa longifolia-Carex filifolia?	SP-M	Brja,Brte	2?
Stipa comata-Bouteloua gracilis-Carex filifolia	LP-M	Brja,Brte	2?
Artemisia pedatifida/Pascopyrum smithii	SP-M	Brja	2?
Artemisia tridentata ssp. wyomingensis/ Pascopyrum smithii	LP	Brja,Brte	2?
Pascopyrum smithii-Nasella viridula	LP	Brja,Brte	2?
Artemisia tridentata ssp. wyomingensis/Mixed Grass?	LP	Brja,Brte	2?
Artemisia cana ssp. cana/Pascopyrum smithii	SP	Brja,Brte	2?
Artemisia cana ssp. cana/Calamovilfa longifolia	LP		
Sarcobatus vermiculatus/Pascopyrum smithii?	LP	Brja,Brte	2?
Pascopyrum smithii Herbaceous Vegetation	LP		

**Polygon Natural Community Classification:**

- Primary:** Calamovilfa longifolia-Carex filifolia? (maybe C. longifolia-Stipa comata) with Artemisia cana ssp. cana
- Secondary:** Artemisia cana ssp. cana/Calamovilfa longifolia

**Ownership Classification:** 3.

**Exotic Comments:** Biennial brome grasses (*Bromus japonicus* and *B. tectorum*) are common throughout and dominate patches of several hundred square meters in most of the plant associations.

**Land-use Disturbance Rating:** 2

**Land-use Disturbance Comments:** The primary disturbances are coal mining in the south-central part, and oil fields in the central and western parts.

**Cropland Conversion Rating:** ?

**Preliminary Conservation Significance Rating:** 2?

**Survey Intensity Comments:** Survey was limited to the western, southern, and eastern edges of the polygon. The survey was conducted by driving stretches of public roads and noting the distribution and abundance of vegetation types and exotic species. The identity of the plant associations is uncertain because on-the-ground survey was limited to two parcels of public land on the eastern edge of the polygon and one parcel on the southern edge.

**Outstanding Sites:** None known at present.

**AREAS NEEDING FURTHER INVESTIGATION**

1. The north-central part of the polygon (T35N, R76W; T36N, R76&77W) may contain areas that represent the mosaic of plant associations growing on stabilized sand dunes and sandy soils. This area may extend northward into polygon 169c.

## REA Summary Form

**Polygon Number:** 169c (Wyo)

**Polygon Description:**

Over most of the polygon, the matrix vegetation is the *Pascopyrum smithii*-*Nasella viridula* grass association, with *Artemisia tridentata* ssp. *wyomingensis* (canopy cover < ca. 20%) and *Sarcobatus vermiculatus* (canopy cover < ca. 10%) common throughout. Large patches of *Atriplex gardneri*/*Pascopyrum smithii* vegetation grow on shale slopes, and the *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* grass association, also with *Artemisia tridentata* ssp. *wyomingensis* (canopy cover to ca. 20%) forms patches on sandy soils. Large patches of ponderosa pine woodland (probably the *P. ponderosa*/*Pseudoroegneria spicata* association) grow on sandstone outcrops, and small patches of the *Calamovilfa longifolia*-*Carex filifolia* association (or the *C. longifolia*-*Stipa comata* association) occur in sandy draws at the bases of sandstone slopes on the western side of the polygon. Draws contain small patches of *Artemisia cana* ssp. *cana*/*Pascopyrum smithii* vegetation, and larger stream valleys contain the *Sarcobatus vermiculatus*/*Pascopyrum smithii* association on higher terraces and small patches of *Scirpus pungens* herbaceous vegetation along the channels. Along the western side of the polygon, grassland of the *Pascopyrum smithii*-*Bouteloua gracilis*/*Carex filifolia* association, with *Artemisia tridentata* ssp. *wyomingensis* (canopy cover to 20%) is the matrix vegetation in a fine-grained pattern of vegetation types. The matrix type in at least one valley in the center is the *Artemisia pedatifida*/*Pascopyrum smithii* association, with *Artemisia tridentata* ssp. *wyomingensis* present.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Pascopyrum smithii</i> - <i>Nassella viridula</i>	M	Brja,Brte	2?
<i>Pascopyrum smithii</i> - <i>Bouteloua gracilis</i> / <i>Carex filifolia</i>	M	Brja,Brte	2?
<i>Stipa comata</i> - <i>Bouteloua gracilis</i> - <i>Carex filifolia</i>	SP-LP	Brja,Brte	2?
<i>Atriplex gardneri</i> / <i>Pascopyrum smithii</i>	LP	Brja,Brte	2?
<i>Sarcobatus vermiculatus</i> / <i>Pascopyrum smithii</i>	SP-LP	Brja,Brte	2
<i>Pinus ponderosa</i> / <i>Pseudoroegneria spicata</i>	LP		
<i>Artemisia cana</i> ssp. <i>cana</i> / <i>Pascopyrum smithii</i>	SP-LP	Brja,Brte	2?
<i>Populus deltoides</i> / <i>Pascopyrum smithii</i>	SP-LP		
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i> / <i>Pascopyrum smithii</i>	LP		
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i> /Mixed Grass	LP		
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i> / <i>Pseudoroegneria spicata</i>	SP		
<i>Artemisia pedatifida</i> / <i>Pascopyrum smithii</i>	M	Brja	2?
<i>Pseudoroegneria spicata</i>	SP		
<i>Artemisia cana</i> ssp. <i>cana</i> / <i>Pascopyrum smithii</i>	SP	Brja,Brte	2?
<i>Scirpus pungens</i>	SP		
<i>Calamovilfa longifolia</i> - <i>Carex filifolia</i> ?	SP		

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Bouteloua gracilis*/*Carex filifolia* with *Artemisia tridentata* ssp. *wyomingensis*

**Secondary:** *Atriplex gardneri*/*Pascopyrum smithii*

**Ownership Classification:** 3.

**Exotic Comments:** Biennial brome grasses (*Bromus japonicus* and *B. tectorum*) are common throughout and dominate patches up to several hundred square meters in the grass and shrub vegetation types. *Tamarix chinensis* is present along streams in the western part and common along Salt Creek and its tributaries in the central part. *Cirsium arvense* is present in riparian zones and draws, but its extent and abundance are unknown.

**Land-use Disturbance Rating:** 3.

**Land-use Disturbance Comments:** Oil fields are present throughout the polygon, and dominate the landscape in the center (the Salt Creek Field) and in some valleys along the eastern side (Teapot Dome). Bentonite strip mines are present in the center.

**Cropland Conversion Rating:** 3?

**Preliminary Conservation Significance Rating:** 3.

**Survey Intensity Comments:** Geographic coverage was good, with road surveys (driving stretches of public roads and noting the distribution and abundance of vegetation types and exotic plants) in all but the northeastern and southwestern corners. Identity of the vegetation types is moderately certain, with on-the-ground survey in the central and western parts of the polygon.

**Outstanding Sites:** None known.

**AREAS NEEDING FURTHER INVESTIGATION:**

1. The southeastern part of the polygon (T37N, R75-77W; T38N, R76-77W; T39N, R76&77W; T40N, R76&77W) may contain sites that represent the mosaic of plant associations typical of the sandstone hills. This area extends eastward into polygon 169d.
2. The southwestern part of the polygon (T38N, R80W; T39N, R80W), combined with the adjacent part of polygon 204c to the west, may contain sites that adequately represent the mosaic of plant associations typical of fine-textured substrates.

## REA Summary Form

**Polygon Number:** 169d (Wyo)

**Polygon Description:**

This polygon consists of rolling plains with several perennial streams flowing northeastward. Geologic substrates are inter-bedded sandstones and shales, with sandstone dominating along the western edge. Outcrops of scoria (porcellanite) are present in the Red Hills in the east-central part. Throughout most of the polygon, the matrix vegetation is grassland of the *Pascopyrum smithii*-*Bouteloua gracilis*/*Carex filifolia* association, with *Artemisia tridentata* ssp. *wyomingensis* common (canopy cover to ca. 20%). Sagebrush is dense enough in swales and draws to form patches of the *Artemisia tridentata* ssp. *wyomingensis*/Mixed Grass association (with *Pascopyrum smithii* and *Bouteloua gracilis* as dominant species). Small patches of the *Artemisia pedatifida* association occur in this matrix in the central and eastern parts, and stream valleys contain patches of the *Sarcobatus vermiculatus*/*Pascopyrum smithii* association (on higher terraces) and the *Artemisia cana* ssp. *cana*/*Pascopyrum smithii* association (on lower terraces). A few small playas containing the *Pascopyrum smithii*-*Eleocharis* spp. association occur in the matrix in the central part of the polygon. In the western third of the polygon, the *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* association (with *Artemisia tridentata* ssp. *wyomingensis* canopy cover to ca. 20%) is the matrix, and this association forms large patches on sandy soils elsewhere. Small patches of *Calamovilfa longifolia* (probably the *C. longifolia*-*Carex filifolia* or the *C. longifolia*-*Stipa comata* association) occur throughout the polygon, and small patches of *Pseudoroegneria spicata* bunchgrass vegetation (probably the *P. spicata*-*Bouteloua gracilis* association) occur on scoria slopes in the east. *Populus deltoides* woodlands (probably the *P. deltoides*/*Pascopyrum smithii* association) form large patches on the larger streams. Irrigated hay meadows are present along the larger streams, and dryland hay meadows or pastures (planted to crested wheatgrass) form large patches in the central part.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Pascopyrum smithii</i> - <i>Bouteloua gracilis</i> / <i>Carex filifolia</i>	LP-M	Brja,Brte	2
<i>Stipa comata</i> - <i>Bouteloua gracilis</i> - <i>Carex filifolia</i>	SP-LP-M	Brja,Brte	2
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i> /Mixed Grass	LP	Brte	2
<i>Populus deltoides</i> / <i>Pascopyrum smithii</i> ?	SP-LP		
<i>Pascopyrum smithii</i> - <i>Nasella viridula</i>	SP-LP	Brja	3?
<i>Calamovilfa longifolia</i> - <i>Carex filifolia</i> ?	SP		
<i>Scirpus pungens</i>	SP		
<i>Typha latifolia</i> ?	SP		
<i>Pascopyrum smithii</i> - <i>Eleocharis</i> spp.	SP		
<i>Artemisia pedatifida</i> / <i>Pascopyrum smithii</i>	SP	Brja	2?
<i>Pseudoroegneria spicata</i> - <i>Bouteloua gracilis</i> ?	SP-LP		
<i>Sarcobatus vermiculatus</i> / <i>Pascopyrum smithii</i>	SP	Brja	2?
<i>Artemisia cana</i> ssp. <i>cana</i> / <i>Pascopyrum smithii</i>	SP-LP	Brja	2?

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Bouteloua gracilis*/*Carex filifolia* with *Artemisia tridentata* ssp. *wyomingensis*

**Secondary:** *Populus deltoides*/*Pascopyrum smithii*?

**Ownership Classification:** 3

**Exotic Comments:** Biennial brome grasses (*Bromus japonicus* and *B. tectorum*) are common throughout and dominate patches up to several hundred square meters in the grass and shrub vegetation types. *Cirsium arvense* is present in moist draws and riparian areas. *Elaeagnus angustifolia* is present along streams in the center, but its extent is unknown. *Onopordum acanthium* and *Carduus nutans* were observed in the western part, but their extent in the polygon is unknown.

**Land-use Disturbance Rating:** 2.

**Land-use Disturbance Comments:** Oil fields are located in the center of the polygon and along the western side. Large surface coal mines are located in the northeastern part, and small coal strip mines (probably abandoned) are located in the south-central part.

**Cropland Conversion Rating:** 2?

**Preliminary Conservation Significance Rating:** 2?

**Survey Intensity Comments:** Geographic coverage was good in the south-central, west-central, central, and east-central parts of the polygon, using a modified rapid ecological assessment that consists of driving stretches of public roads and recording the distribution and abundance of vegetation types and exotic plants. Lack of public roads prevented survey of the remainder of the polygon. On-the-ground survey to confirm identification of plant associations was limited to the eastern part.

**Outstanding Sites:**

1. Part of the Cheyenne River-Antelope Creek Macrosite (S.USWYHP2\*575, ranked B2) lies in the northeastern part of the polygon, in T39N, R68-R70W; T40N, R68-R70W. This site includes the Coal Bank Draw potential Research Natural Area (ecological evaluation completed 1996 by Wyoming Natural Diversity Database for the USDA Forest Service, as part of Thunder Basin National Grassland plan revision) and the Antelope Creek potential Research Natural Area (ecological evaluation by Wyoming Natural Diversity Database for USDS Forest Service in progress). It also contains an excellent example of *Populus deltoides* woodland, large occurrences of *Pascopyrum smithii*-*Bouteloua gracilis*/*Carex filifolia* grassland, and *Sarcobatus vermiculatus* shrubland, a large black-tailed prairie dog colony (20,000-24,000 acres), and other plant associations and species. The macrosite also extends into the polygons to the north and east.

**AREAS NEEDING FURTHER INVESTIGATION:**

1. The west-central part of the polygon (T38N, R75W; T39N, R75&76W; T40N, R75&76W) is the most likely place to contain sites large enough to adequately represent the mosaic of plant associations (primarily *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* grassland matrix with patches of *Pascopyrum smithii*-*Nassella viridula* grassland, *Calamovilfa longifolia*-*Stipa comata* grassland, and *Populus deltoides* woodland).

2. Antelope Creek in the north-central part of the polygon (T40N, R72-75W) may be a good representative of *Populus deltoides* woodland and other prairie riparian types.

## REA Summary Form

**Polygon Number:** 169e (Wyo)

**Polygon Description:**

This polygon consists of rolling plains on inter-bedded sandstones and shales, with a line of north-south escarpments capped by scoria (porcellanite) in the eastern part. The matrix vegetation in most of the polygon is grassland of the *Pascopyrum smithii*-*Bouteloua gracilis*/*Carex filifolia* association. On large areas of sandier soils in the eastern part, the matrix vegetation is grassland of the *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* association. In both grassland types, *Artemisia tridentata* ssp. *wyomingensis* is common, with canopy cover up to 25%. Shrub vegetation of the *A. tridentata* ssp. *wyomingensis*/Mixed Grass association (with an understory dominated by *Pascopyrum smithii*, *Bouteloua gracilis*, and *Carex filifolia*) grows in large patches in the matrix vegetation, and merges with the matrix grassland. Sandy ridges support small stands of *Calamovilfa longifolia* grass vegetation. Grass vegetation of the *Pascopyrum smithii*-*Nasella viridula* association grows in draws, and similar vegetation with a shrub layer of *Artemisia tridentata* ssp. *wyomingensis* (the *A. tridentata* ssp. *wyomingensis*/*Pascopyrum smithii* association) grows in large patches on shale soils in the east. Stream valleys contain stands of the *Sacrobatus vermiculatus*/*Pascopyrum smithii* association on higher terraces, the *Artemisia cana* ssp. *cana*/*Pascopyrum smithii* association on intermediate terraces, and small areas of *Pascopyrum smithii*-*Distichlis spicata* vegetation. *Populus deltoides* woodlands (probably the *P. deltoides*/*Pascopyrum smithii* association, with *Calamovilfa longifolia* dominating understories on sandy soils) grow along larger streams. Playas occur in the eastern and southern parts of the polygon and contain the *Pascopyrum smithii*-*Eleocharis* spp. association, with *Juncus balticus* vegetation in the deeper playas. The escarpments in the eastern part support a matrix of *Pseudoroegneria spicata* bunchgrass vegetation (probably the *P. spicata*-*Bouteloua gracilis* association), with large patches of ponderosa pine woodland (probably the *P. ponderosa*/*Schizachyrium scoparium* association and the *Pinus ponderosa*/*Juniperus scopulorum* association), patches of *Juniperus scopulorum* woodland (probably the *Juniperus scopulorum*/*Pseudoroegneria spicata* association), patches of sparsely-vegetated scoria, and patches of Eroding Great Plains Badlands (with sparse *Pascopyrum smithii* or *Elymus lanceolatus* ssp. *lanceolatus* and *Eriogonum* sp.). Planted hay fields or pastures, mainly of crested wheatgrass, form large patches throughout the polygon, and most show up on the land cover map.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Stipa comata</i> - <i>Bouteloua gracilis</i> - <i>Carex filifolia</i> w/ <i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	SP-LP-M	Brja	2
<i>Pascopyrum smithii</i> - <i>Bouteloua gracilis</i> / <i>Carex filifolia</i> w/ <i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	LP-M	Brja	2
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i> /Mixed Grass	SP-LP	Brja	2?
<i>Pascopyrum smithii</i> - <i>Nasella viridula</i>	SP	Brja	3?
<i>Pascopyrum smithii</i> - <i>Eleocharis</i> spp.	SP-LP		
<i>Sacrobatus vermiculatus</i> / <i>Pascopyrum smithii</i>	SP-LP	Brja	3?
<i>Pseudoroegneria spicata</i> - <i>Bouteloua gracilis</i>	SP-LP-M		
<i>Populus deltoides</i> / <i>Pascopyrum smithii</i> ?	SP-LP		
<i>Artemisia cana</i> ssp. <i>cana</i> / <i>Pascopyrum smithii</i>	SP	Brja	2?
<i>Spartina pectinata</i>	SP		
<i>Yucca glauca</i> / <i>Calamovilfa longifolia</i>	SP		
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i> / <i>Pascopyrum smithii</i>	LP-M	Brja	3?
<i>Juncus balticus</i>	SP		
<i>Pascopyrum smithii</i> - <i>Distichlis spicata</i>	SP	Brja	2?
<i>Pinus ponderosa</i> / <i>Schizachyrium scoparium</i> ?	SP-LP		
<i>Pinus ponderosa</i> / <i>Juniperus scopulorum</i> ?	SP		
<i>Juniperus scopulorum</i> / <i>Pseudoroegneria spicata</i> ?	SP		
Eroding Great Plains Badlands	SP		
<i>Schizachyrium scoparium</i> - <i>Bouteloua</i> spp- <i>Carex filifolia</i> ?	SP		

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Bouteloua gracilis*/*Carex filifolia* with *Artemisia tridentata* ssp. *wyomingensis*

**Secondary:** *Pinus ponderosa*/*Schizachyrium scoparium*?

**Ownership Classification:** 3.

**Exotic Comments:** Biennial brome grasses (*Bromus japonicus* and *B. tectorum*) are common to abundant throughout and dominate patches up to several hundred square meters in the grass and shrub vegetation types.

**Land-use Disturbance Rating:** 3.

**Land-use Disturbance Comments:** Oil and gas fields are located throughout the polygon, large coal strip mines are located in the south-central part, and railroad lines and paved roads run north-south through the center. Together, these facilities produce a quasi-industrial landscape in a large part of the polygon.

**Cropland Conversion Rating:** 1?

**Preliminary Conservation Significance Rating:** 3.

**Survey Intensity Comments:** Geographic coverage of all but the northeastern quarter of the polygon was good, using a modified rapid ecological survey (driving public roads to record the distribution and abundance of vegetation types and exotic plants). On-the-ground survey to check the identity of plant associations was limited to the southeastern part of the polygon.

**Outstanding Sites:**

1. Part of the Cheyenne River-Antelope Creek Macrosite (S.USWYHP2\*575, ranked B2) lies in the southeastern corner of the polygon, T41N, R69W, T42N, R68 & 69W. It contains excellent example of *Populus deltoides* woodland, large occurrences of *Pascopyrum smithii*-*Bouteloua gracilis*/*Carex filifolia* grassland, *Sarcobatus vermiculatus* shrubland, *Pinus ponderosa* woodlands, a large black-tailed prairie dog colony (20,000-24,000 acres), and other plant associations and species. The macrosite extends into polygons to the south and east.

**AREAS NEEDING FURTHER INVESTIGATION**

1. The northeastern part of the polygon (T44-46N, RR67-69W) is the most likely part of the polygon to contain sites large enough to represent the mosaic of plant association. The remainder of the polygon contains a relatively high density of oil and gas fields, coal mines, and their appurtenant facilities, and of crested wheatgrass meadows.

**REA Summary Form**

**Polygon Number:** 169f (Wyo)

**Polygon Description:**

This polygon consists of gently rolling plains with four buttes (Pumpkin Buttes) ca. 500 feet tall in the southwest, and a series of rounded hills formed in scoria (porcellanite) in the northeast. The Belle Fourche River flows north through the central part of the polygon. The geologic substrates are primarily inter-bedded sandstones and shales. Over most of the polygon, the matrix vegetation is grassland of the *Stipa comata-Bouteloua gracilis-Carex filifolia* association, with *Artemisia tridentata* ssp. *wyomingensis* contributing up to 25% canopy cover in much of the grassland. In large patches within the matrix, the sagebrush is dense enough to form stands of the *Artemisia tridentata* ssp. *wyomingensis*/*Stipa comata-Bouteloua gracilis* association. Small stands of *Calamovilfa longifolia* (probably the *C. longifolia-Stipa comata* association) grow on slopes and ridges within this matrix. In a limited area in the western part of the polygon, the matrix vegetation is grassland of the *Pascopyrum smithii-Bouteloua gracilis/Carex filifolia* association with *A. tridentata* ssp. *wyomingensis* cover to 25%, containing large patches of the *A. tridentata* ssp. *wyomingensis*/Mixed Grass association (understory dominated by *Pascopyrum smithii* and *Bouteloua gracilis*) and the *A. tridentata* ssp. *wyomingensis*/*Pascopyrum smithii* association (understory of *P. smithii* and *Nasella viridula*) that merge with the matrix. Small stands of the *Pascopyrum smithii-Nasella viridula* association grow in draws throughout, and a few small playas in the north contain the *Pascopyrum smithii-Eleocharis* spp. association. Woodlands of *Populus deltoides* (probably the *P. deltoides/Pascopyrum smithii* association) grow on larger streams in the north. The scoria hills in the northeast support sparse *Pseudoroegneria spicata* bunchgrass vegetation, probably of the *P. spicata-Bouteloua gracilis* association, with *Artemisia tridentata* ssp. *wyomingensis* throughout. Large fields of crested wheatgrass are common throughout the polygon, and large hay meadows are common in the Belle Fourche River valley.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Stipa comata-Bouteloua gracilis-Carex filifolia</i> w/ <i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	LP-M	Brja,Brte	2?
<i>Calamovilfa longifolia-Stipa comata</i> ?	SP	Brja	2?
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i> /Mixed Grass	SP-LP-M	Brja	3?
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i> / <i>Stipa comata-Bouteloua gracilis</i>	SP-LP		
<i>Pascopyrum smithii-Bouteloua gracilis/Carex filifolia</i>	M	Brja	3?
<i>Pascopyrum smithii-Nasella viridula</i>	SP	Brja	3?
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i> / <i>Pascopyrum smithii</i>	LP	Brja	3?
<i>Pascopyrum smithii-Eleocharis</i> spp.	SP		
<i>Pseudoroegneria spicata-Bouteloua gracilis</i> ?	LP		

**Polygon Natural Community Classification:**

**Primary:** *Stipa comata-Bouteloua gracilis-Carex filifolia* with *Artemisia tridentata* ssp. *wyomingensis*  
**Secondary:** *Artemisia tridentata* ssp. *wyomingensis*/Mixed Grass

**Ownership Classification:** 4.

**Exotic Comments:** Biennial brome grasses (primarily *Bromus japonicus*) are common to abundant throughout the polygon. Canada thistle (*Cirsium arvense*) is present in the tilled fields and probably in the riparian zones. Exotic hay grasses (especially *Bromus inermis* var. *inermis*) are common in the riparian zones.

**Land-use Disturbance Rating:** 3.

**Land-use Disturbance Comments:** Oil and gas fields are common throughout the polygon.

**Cropland Conversion Rating:** 1?

**Preliminary Conservation Significance Rating:** 3.

**Survey Intensity Comments:** Geographic coverage was good using a modified rapid ecological assessment that consists of driving stretches of public roads and noting the distribution and abundance of vegetation types and exotic plants. Identity of the plant associations is highly questionable, because no public lands were located for on-the-ground survey.

**Outstanding Sites:** None known.

**AREAS NEEDING FURTHER INVESTIGATION**

Given the extent of oil and gas fields and crested wheatgrass meadows, this polygon is unlikely to contain large sites that represent the vegetation mosaic well. The Pumpkin Buttes in the southwestern part may contain unusual species occurrences or vegetation types.

## REA Summary Form

**Polygon Number:** 169g (Wyo)

**Polygon Description:**

This polygon consists of gently rolling hills and broad stream valleys developed in inter-bedded shale and sandstone substrates, with a north-south row of scoria (porcellanite) - capped hills along the western side. The matrix vegetation over most of the polygon is grassland of the *Pascopyrum smithii*-*Bouteloua gracilis*/*Carex filifolia* association, with *Artemisia tridentata* ssp. *wyomingensis* contributing up to 25% canopy cover. Where the sagebrush is dense, in large patches within the matrix, the vegetation belongs to the *Artemisia tridentata* ssp. *wyomingensis*/Mixed Grass association (with *Pascopyrum smithii* and *Bouteloua gracilis* as dominant species). Small areas of the *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* association (with *Artemisia tridentata* ssp. *wyomingensis* cover to ca. 25%) are common on ridges, and small patches of the *Yucca glauca*/*Calamovilfa longifolia* association grow on sandy hillsides and ridges. *Populus deltoides*/*Pascopyrum smithii* woodlands grow along the larger streams, and long, narrow patches of *Spartina pectinata* vegetation are present along stream channels. Stands of the *Artemisia cana* ssp. *cana*/*Pascopyrum smithii* association grow in valley bottoms. In the southeastern part of the polygon, the matrix vegetation is the *Pascopyrum smithii*-*Nasella viridula* association, with *Artemisia tridentata* ssp. *wyomingensis* throughout. In large patches within that grass matrix, the sagebrush is dense enough to form stands of the *Artemisia tridentata* ssp. *wyomingensis*/*Pascopyrum smithii* association. The scoria hills along the western side support ponderosa pine woodlands, probably belonging to the *Pinus ponderosa*/*Schizachyrium scoparium* association. Large fields planted to crested wheatgrass are common throughout the polygon, and much of this exotic vegetation type appears on the land cover map.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Stipa comata</i> - <i>Bouteloua gracilis</i> - <i>Carex filifolia</i> w/ <i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	SP		
<i>Pascopyrum smithii</i> - <i>Bouteloua gracilis</i> / <i>Carex filifolia</i> w/ <i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	M	Brja	3?
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i> /Mixed Grass	LP	Brja	3?
<i>Populus deltoides</i> / <i>Pascopyrum smithii</i>	SP-LP		
<i>Pascopyrum smithii</i> - <i>Nasella viridula</i>	M	Brja	3?
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i> / <i>Pascopyrum smithii</i>	LP	Bjra	3?
<i>Artemisia cana</i> ssp. <i>cana</i> / <i>Pascopyrum smithii</i>	SP-LP	Brja	3?
<i>Spartina pectinata</i>	SP		
<i>Sarcobatus vermiculatus</i> / <i>Pascopyrum smithii</i>	SP	Brja	3?
<i>Yucca glauca</i> / <i>Calamovilfa longifolia</i>	SP		
<i>Pinus ponderosa</i> / <i>Schizachyrium scoparium</i>	SP		

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Bouteloua gracilis*/*Carex filifolia* with *Artemisia tridentata* ssp. *wyomingensis*

**Secondary:** *Pascopyrum smithii*-*Nasella viridula*

**Ownership Classification:** 4.

**Exotic Comments:** Biennial brome grasses (principally *Bromus japonicus*) are abundant throughout the grasslands and shrub vegetation in the polygon.

**Land-use Disturbance Rating:** 3

**Land-use Disturbance Comments:** Oil and gas fields are present in most of the central part of the polygon. In broad valleys in the central part of the polygon, substantial parts of the landscape have been converted to crested wheatgrass meadows, and farmsteads and ranchsteads are common.

**Cropland Conversion Rating:** 2?

**Preliminary Conservation Significance Rating:** 3.

**Survey Intensity Comments:** The central and southeastern parts of the polygon were surveyed by driving public roads and noting the distribution and abundance of vegetation types and exotic species. The western and northeastern parts of the polygon were not surveyed. Identity of the plant associations is uncertain over much of the polygon because the lack of accessible public land prevented on-the-ground survey.

**Outstanding Sites:** None known. Given the abundance of crested wheatgrass meadows and farmsteads, sites in this polygon are likely to be small and centered on occurrences of species. No large sites containing representative mosaics of plant associations are likely to be found.

## REA Summary Form

**Polygon Number:** 169h (Wyo)

**Polygon Description:**

This polygon is a mix of gently-rolling plains and broad stream valleys, largely developed in fine-textured sediments, with large areas of rough sandstone, shale, and scoria (porcellanite) hills in the eastern and western parts. Because of the heterogeneity of topography and substrate, the vegetation pattern is complicated, and designating a single matrix vegetation type is difficult. Over most of the polygon, the matrix vegetation probably is grassland of the *Pascopyrum smithii*-*Bouteloua gracilis*/*Carex filifolia* association, with *Artemisia tridentata* ssp. *wyomingensis* contributing 10% to 25% cover. The sagebrush is dense enough in large patches for the vegetation to be considered the *Artemisia tridentata* ssp. *wyomingensis*/Mixed Grass association (in which the *Pascopyrum smithii* and *Bouteloua gracilis* are important understory species).

Grass vegetation of the *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* association forms the matrix vegetation in a substantial area in the eastern part of the polygon; *Artemisia tridentata* ssp. *wyomingensis* contributes up to ca. 20% canopy cover in much of this vegetation but is absent from large areas, and *Selaginella densa* is a common ground cover on sandy soils. Gently-rolling shale uplands in the hills in the western part support a matrix of *Pascopyrum smithii*-*Nasella viridula* grassland with *Artemisia tridentata* ssp. *wyomingensis* contributing 10% to 25% canopy cover, and this grassland type also forms patches elsewhere in the polygon. *Artemisia tridentata* ssp. *wyomingensis*/*Pascopyrum smithii* vegetation (with *Nasella viridula* co-dominant in the understory) occurs in small to large patches in the hills of the eastern and western parts of the polygon. Sandy soils in the hills support small stands of the *Yucca glauca*/*Calamovilfa longifolia* and *C. longifolia* without *Yucca* (probably the *C. longifolia*-*Stipa comata* association), while rocky slopes *Schizachyrium scoparium* bunchgrass vegetation (probably the *S. scoparium*-*Bouteloua spp.*-*Carex filifolia* association) and *Pseudoroegneria spicata* bunchgrass vegetation (probably the *P. spicata*-*Bouteloua gracilis* association).

*Pinus ponderosa* woodlands (probably the *P. ponderosa*/*Schizachyrium scoparium* association and the *P. ponderosa*/*Juniperus scopulorum* association) are common in the hills in both the eastern and western parts of the polygon. The hills in the western part of the polygon contain a substantial area in patches of sparsely-vegetated scoria outcrops and colluvium. Woody draws in the hills of the eastern part support patches of *Acer negundo* woodland (perhaps degraded examples of the *A. negundo*/*Prunus virginiana* association, in which *Symphoricarpos occidentalis* dominates the understory), patches of the *Crataegus (succulenta, douglasii)*/*Symphoricarpos occidentalis* association, and small patches of *Symphoricarpos occidentalis* shrub vegetation. The *Artemisia cana* ssp. *cana*/*Pascopyrum smithii* association is present in draws in the eastern hills, and small stands of the *Artemisia cana* ssp. *cana*/*Calamovilfa longifolia* grow in sandy draws below sandstone hills. Large stands of *Populus deltoides* woodland (probably the *P. deltoides*/*Pascopyrum smithii* association) grow along Little Powder River and its major tributaries, and small patches of woodland (probably the *P. deltoides*/*Symphoricarpos occidentalis* association) occur in draws of the hills in the eastern part of the polygon. A *Populus deltoides*/*Calamovilfa longifolia* association may be present in sandy draws of the eastern hills. *Spartina pectinata* stands grow along the channels of larger streams, in the hills in the eastern and western parts of the polygon. Large patches of grassland vegetation have been planted to crested wheatgrass pastures in the central and eastern parts of the polygon. Irrigated hay meadows form large patches in the valley of Little Powder River and along a few of the larger streams.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Pascopyrum smithii</i> - <i>Bouteloua gracilis</i> / <i>Carex filifolia</i> w/ <i>Artemisia tridentata</i> ssp <i>wyomingensis</i>	M	Brja	2?
<i>Stipa comata</i> - <i>Bouteloua gracilis</i> - <i>Carex filifolia</i>	SP-LP-M	Brja	2?
<i>Schizachyrium scoparium</i> - <i>Bouteloua spp.</i> - <i>Carex filifolia</i> ?	SP-LP		
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i> /Mixed Grass	SP-LP	Brja	2?
<i>Calamovilfa longifolia</i> - <i>Stipa comata</i> ?	SP-LP	Brja	?
<i>Artemisia cana</i> ssp. <i>cana</i> / <i>Pascopyrum smithii</i>	SP	Brja	2?
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i> / <i>Pascopyrum smithii</i>	SP-LP	Brja	3?
<i>Pinus ponderosa</i> / <i>Schizachyrium scoparium</i>	SP-LP		

Pinus ponderosa/Juniperus scopulorum?	SP		
Yucca glauca/Calamovilfa longifolia	SP-LP		
Acer negundo/Prunus virginiana?	SP		
Pascopyrum smithii-Nasella viridula	SP-M	Brja	3?
Populus deltoides/Pascopyrum smithii	SP-LP	Brin,Popr	3
Populus deltoides/Symphoricarpos occidentalis	SP-LP	Popr	3?
Crataegus spp./Symphoricarpos occidentalis	SP		
Pseudoroegneria spicata-Bouteloua gracilis?	SP		
Spartina pectinata	SP-LP		
(Populus deltoides/Calamovilfa longifolia)	SP		
Artemisia cana ssp. cana/Calamovilfa longifolia	SP		
Symphoricarpos occidentalis?	SP		

**Polygon Natural Community Classification:**

**Primary:** Pascopyrum smithii-Bouteloua gracilis/Carex filifolia, with Artemisia tridentata ssp. wyomingensis

**Secondary:** Schizachyrium scoparium-Bouteloua spp.-Carex filifolia

**Ownership Classification:** 3

**Exotic Comments:** Biennial brome grasses (principally *Bromus japonicus*) are common to abundant throughout most of the grasslands and shrub vegetation.

**Land-use Disturbance Rating:** 2

**Land-use Disturbance Comments:** Oil fields are present in the western and southeastern parts of the polygon, and a considerable portion of the polygon, particularly in the valley of Little Powder River, has been converted from native vegetation to crested wheatgrass pastures and hay meadows.

**Cropland Conversion Rating:** 2?

**Preliminary Conservation Significance Rating:** 2?

**Survey Intensity Comments:** Coverage of the eastern and northwestern parts of the polygon was good, using a modification of rapid ecological assessment that involved driving stretches of public roads and recording the distribution and abundance of vegetation types and exotic plants. The western part of the polygon was not surveyed. Identification of the plant associations in woody draws and on the scoria hills is uncertain because on-the-ground survey was restricted to several parcels of public land in the eastern part.

**Outstanding Sites:**

1. Duck Creek Breaks. Ca. 8300 acres of inventoried semi-primitive area in T55N, R69W were identified in the USFS Biological Diversity Report for the Thunder Basin National Grassland (Byer et al. 1992, pp. 108, 156) as an area with special biological diversity, because it contains woody draws, aspen groves, woodlands of large ponderosa pines, and small areas of tallgrass prairie -- features that were not observed in the rapid ecological assessment. Part of this area was identified by USFS as the Big Draw potential research natural area, and was evaluated in 1996 by the Wyoming Natural Diversity Database.

**AREAS NEEDING FURTHER INVESTIGATION:**

1. Little Powder River, in the center of the polygon, supports an extensive *Populus deltoides* woodland. The amount of exotic species in the vegetation, and the degree to which the trees are reproducing, is unclear and must be confirmed by field investigation.

## REA Summary Form

**Polygon Number:** 173 (SD)

### **Polygon Description:**

The approximate eastern two-thirds of this polygon supports a matrix prairie consisting of the *Pascopyrum smithii*-*Bouteloua gracilis* natural community. Upper slopes, ridgetops, and the western third of the polygon are dominated by the *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* association. Drainage areas sporadically support a woody natural community of greater than 20 percent canopy coverage. Green ash and cottonwood occur in these areas of higher moisture retention. Frequently, *Spartina pectinata* vegetates low-lying prairie and drainage regions of intermittent to perennial moisture. Drainage terraces support the *Artemisia cana*/*Pascopyrum smithii* natural community in narrow bands, which seldom extend significantly into the adjacent prairie. Artificial ponds and their associated wet meadows provide a water source for livestock. Alkaline wet meadow and drainage vegetation includes *Eleocharis spp.*, *Scirpus maritimus*, *Distichlis spicata*, and *Hordeum jubatum*.

### **Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii-Bouteloua gracilis-Carex filifolia	M	Brte	3
Stipa comata-Bouteloua gracilis-Carex filifolia	LP	Brte	3
Artemisia cana/Pascopyrum smithii	LP	Brte	3
Artemisia cana/Stipa comata	LP	Brte	3
Populus deltoides-Fraxinus pennsylvanica Lowland Forest	LP		
Spartina pectinata-Calamagrostis stricta-Carex spp.	SP		
Eleocharis palustris Herbaceous Vegetation	SP		
Distichlis spicata - Hordeum jubatum	SP		

### **Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Bouteloua gracilis*-*Carex filifolia*

**Secondary:** *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia*

**Ownership Classification:** 4

**Exotic Comments:** Infestation levels range from high to very high throughout much of the polygon. In addition to cheatgrass, *Agropyron cristatum* and *Bromus inermis* occur at less than desirable levels.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 3

**Survey Intensity Comments:** Completed good geographic coverage of the polygon using standard sampling technique.

**Outstanding Sites:** None

## REA Summary Form

**Polygon Number:** 175 (SD)

**Polygon Description:**

The dominant natural community identified on the east half of polygon 175 is the relatively species poor *Pascopyrum smithii* Clay Pan Herbaceous Vegetation. Ridgetops and upper slopes of this association are often vegetated by the *Pascopyrum smithii*-*Bouteloua gracilis* community. Shale barrens are frequent throughout the polygon. Wooded draws are usually vegetated by green ash and cottonwood with various understory vegetation. Land management of the polygon focuses on livestock use with little of the bounded region fragmented by cropland. Some native and little planted (alfalfa) hay land is mowed. The western portion of the polygon is in excellent condition. Prairie vegetation consists of the *Pascopyrum smithii*-*Nasella viridula* natural community with *Schizachyrium scoparium*-*Bouteloua spp.* identified on upper slopes and ridgetops. Some patches of *Artemisia cana*/*Pascopyrum smithii* were identified on drainage terraces. Exotic infestation levels are extremely low to non-existent in this region.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Pascopyrum smithii</i> Clay Pan Herbaceous Vegetation	M	Brte	1
<i>Pascopyrum smithii</i> - <i>Nasella viridula</i>	M		
<i>Pascopyrum smithii</i> - <i>Bouteloua gracilis</i>	M	Brte	1
Inland Shale Barren Slopes	LP		
<i>Artemisia cana</i> / <i>Pascopyrum smithii</i>	LP		
<i>Schizachyrium scoparium</i> - <i>Bouteloua spp.</i>	SP		
<i>Populus deltoides</i> - <i>Fraxinus pennsylvanica</i> Lowland Forest	SP		
<i>Salix exigua</i> Shrubland	SP		

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii* Clay Pan Herbaceous Vegetation

**Secondary:** *Pascopyrum smithii*-*Nasella viridula*

**Ownership Classification:** Unknown but estimate 25 - 50% owned by the Cheyenne Indian Reservation.

**Exotic Comments:** Low to moderate infestation levels throughout with only trace amounts in excellent native prairie region south of Eagle Butte.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 1

**Survey Intensity Comments:** Completed good geographic coverage of the polygon using standard sampling technique.

**Outstanding Sites:** Prairie south of Eagle Butte.

## REA Summary Form

**Polygon Number:** 178 (SD)

**Polygon Description:**

A matrix of *Pascopyrum smithii* prairie occurs throughout polygon 178. Dominated by the *Pascopyrum smithii*-*Nasella viridula* natural community, regions of *P. smithii*-*Bouteloua gracilis* or only *P. smithii* are incorporated. In addition, upper slopes and ridgetops often support the *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* community. Sparsely vegetated shale barrens are scattered throughout the prairie, but are more common adjacent to the Cheyenne River and Cherry Creek. *Populus deltoides* communities along the Cheyenne River vary extensively. Many regions of lesser canopy closure are vegetated by the *Populus deltoides*/*Calamovilfa longifolia* association. More open regions consist of the *Calamovilfa longifolia*-*Pascopyrum smithii* community with *Spartina pectinata* and *Salix exigua* along the banks and gravel/sandbars. Areas of increased canopy closure are vegetated by the *Populus deltoides*/*Symphoricarpos occidentalis* community. A small *Salix amygdaloides* community was observed along Cottonwood Creek. Ravines adjacent to the Cheyenne River support a *Juniperus scopulorum* woodland community. *Distichlis spicata* and *Hordeum jubatum* vegetate many low-lying prairie areas. The eastern and central portions of this polygon display a magnificently intact prairie. Some fragmentation occurs near the community of Cherry Creek, along the Cheyenne River, and along Cherry Creek. This fragmentation is predominantly in the form of scattered residences and not crop land.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii-Nasella viridula	M	Brte	1
Stipa comata-Bouteloua gracilis-Carex filifolia	M	Brte	1
Pascopyrum smithii-Bouteloua gracilis	M		
Pascopyrum smithii Clay Pan Herbaceous Vegetation	LP		
(Populus deltoides/Calamovilfa longifolia)	LP		
Juniperus scopulorum Woodland	LP		
Inland Shale Barrens	LP		
Artemisia cana/Pascopyrum smithii	LP		
Populus deltoides/Symphoricarpos occidentalis	LP		
Populus deltoides/Fraxinus pennsylvanica	LP		
Spartina pectinata-Calamagrostis stricta-Carex spp.	SP		
Distichlis spicata-Hordeum jubatum	SP		
Salix amygdaloides Woodland	SP		
Gravel/Sandbar	SP		

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Nasella viridula*  
**Secondary:** *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia*

**Ownership Classification:** 1

**Exotic Comments:** In general, exotic species infestation levels are low on the eastern and central prairies. Western and northern portions have low to moderate levels.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating: 1**

**Survey Intensity Comments:** Completed good geographic coverage of the polygon using standard sampling technique.

**Outstanding Sites:** Cherry Creek/Cheyenne River Prairie

## REA Summary Form

**Polygon Number:** 180 (SD)

**Polygon Description:**

The rolling prairie of polygon 180 is dominated by the *Pascopyrum smithii*-*Bouteloua gracilis* natural community. Upper slopes and ridgetops display the *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* vegetative association. Additionally, *Schizachyrium scoparium* may be quite dense on upper slope and ridgetop prairies. Most woodlands consist of sporadic, widely varying green ash and cottonwood in ravines. South of Elm Creek, the prairie rises substantially, is heavily dissected by the Elm Creek breaks, and exhibits large boulders and rock outcrop regions. In this area, prairie condition is excellent. The more rugged terrain, compared to surrounding prairie, adds a unique flavor to the Elm Creek region and merits further study.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii-Bouteloua gracilis-Carex filifolia	M	Brte, Meof	1,2
Stipa comata-Bouteloua gracilis-Carex filifolia	LP		
Populus deltoides-Fraxinus pennsylvanica Lowland Forest	LP		
Schizachyrium scoparium-Bouteloua spp.	SP		

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Bouteloua gracilis*-*Carex filifolia*  
**Secondary:** *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia*

**Ownership Classification:** 4

**Exotic Comments:** Much of polygon has low to moderate levels of exotic species infestation.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 2

**Survey Intensity Comments:** Completed good geographic coverage of the polygon using standard sampling technique.

**Outstanding Sites:** Elm Creek region.

## REA Summary Form

**Polygon Number:** 183 (SD)

**Polygon Description:**

The rolling uplands of this polygon are dominated by the *Pascopyrum smithii*-*Bouteloua gracilis*-*Carex filifolia* natural community. Nearly of equal dominance is *Pascopyrum smithii* Clay Pan Herbaceous Vegetation. The notable absence of blue grama and/or sedges characterized the latter natural community. Sparsely vegetated shale barrens exist on slopes throughout the polygon, but are more frequent on the eastern half. The *Schizachyrium scoparium*-*Bouteloua* spp. association occurs on most slopes of native prairie at significant levels. Much of the level ridgetops of the polygon have been converted to crop and/or hay land resulting in a fairly high degree of fragmentation throughout the accessed area. Woody draws are characterized by cottonwood and green ash of varying canopy closure. Most native prairie experiences grazing by cattle. A large bison ranch, The Triple U Ranch, does graze a significant amount of the remaining prairie.

**Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Pascopyrum smithii</i> - <i>Bouteloua gracilis</i> - <i>Carex filifolia</i>	M	Brte	1
<i>Pascopyrum smithii</i> Clay Pan Herbaceous Vegetation	M	Brte	1
<i>Schizachyrium scoparium</i> - <i>Bouteloua</i> spp.	SP		
<i>Populus deltoides</i> / <i>Fraxinus pennsylvanica</i> Lowland Forest)	SP		
Inland shale barren slopes	SP		

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Bouteloua gracilis*-*Carex filifolia*

**Secondary:** *Pascopyrum smithii* Herbaceous Vegetation

**Ownership Classification:** 4

**Exotic Comments:** Infestation levels were generally low throughout the polygon.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 2

**Survey Intensity Comments:** Completed good geographic coverage of the polygon using standard sampling technique.

**Outstanding Sites:** None

**REA Summary Form**

**Polygon Number:** 185 (SD)

**Polygon Description:**

Dominated by the *Pascopyrum smithii*-*Bouteloua gracilis* natural community, the rolling prairie hills of the Cheyenne and Belle Fourche Rivers provide much landscape diversity to polygon 185. Upper slopes and ridgetops support a *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* community in addition to the wheatgrass association. Additionally, the southern aspect Belle Fourche River breaks support the needle-and-thread vegetative association on their open grasslands. *Juniperus scopulorum* woodlands were identified along the Cheyenne and Belle Fourche Rivers in ravines and adjacent plateaus. A fairly extensive *Rhus trilobata*/*Carex filifolia* community occurs on the Cheyenne River breaks. Most unique to the Belle Fourche River region is a substantial ponderosa pine community in the Bull and Pine Creek area. Specific understory vegetation was not determined for this area. Dense pine canopy stands were observed and, in all likelihood, support a *Pinus ponderosa*/*Prunus virginiana* natural community. Most surprising, two aspen stands with a *Prunus virginiana* understory were observed in this pine region. Although dry at the time of sampling, it is suspected that springs may occur adjacent to these stands. Shale barrens were identified throughout the polygon, but were most frequent adjacent to the Cheyenne and Belle Fourche Rivers.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Pascopyrum smithii</i> - <i>Bouteloua gracilis</i> - <i>Carex filifolia</i>	M	Brte	2
<i>Pascopyrum smithii</i> - <i>Nasella viridula</i>	M		
<i>Stipa comata</i> - <i>Bouteloua gracilis</i> - <i>Carex filifolia</i>	M		
<i>Schizachyrium scoparium</i> - <i>Bouteloua</i> spp.	SP		
<i>Juniperus scopulorum</i> Woodland	LP		
( <i>Populus deltoides</i> / <i>Calamovilfa longifolia</i> )	LP		
<i>Pinus ponderosa</i> Woodland	LP		
Inland Shale Barrens	LP		
<i>Rhus trilobata</i> / <i>Carex filifolia</i>	LP		
<i>Fraxinus pennsylvanica</i> - <i>Ulmus americana</i>	SP		
<i>Spartina pectinata</i> - <i>Calamagrostis stricta</i> - <i>Carex</i> spp.	SP		
<i>Pinus ponderosa</i> / <i>Prunus virginiana</i>	SP		
<i>Populus tremuloides</i> / <i>Prunus virginiana</i>	SP		

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Bouteloua gracilis*-*Carex filifolia*  
**Secondary:** *Pascopyrum smithii*-*Nasella viridula*

**Ownership Classification:** 4

**Exotic Comments:** Much of polygon has low levels of exotic species infestation.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 3

**Preliminary Conservation Significance Rating:** 1

**Survey Intensity Comments:** Completed good geographic coverage of the polygon using standard sampling technique.

**Outstanding Sites:** Belle Fourche River pine region.

## REA Summary Form

**Polygon Number:** 188 (SD)

**Polygon Description:**

Most of polygons 188's rolling prairie is intact with the *Pascopyrum smithii* Clay Pan Herbaceous Vegetative community. Cheatgrass levels are moderate to heavy throughout. Areas more heavily utilized by livestock often contain substantially more *Bouteloua gracilis* and are of the *Pascopyrum smithii*-*Bouteloua gracilis* association. The *Populus deltoides*/*Fraxinus pennsylvanica* woodland community is dominant in most ravines and along many creeks. West Plum Creek is a major feature of the northwest portion of this polygon. A scenic canyon with *Pascopyrum smithii* prairie vegetation, *Fraxinus pennsylvanica*, *Populus deltoides*, and *Ulmus americana* along the watercourse, and *Juniperus scopulorum* woodlands on canyon walls and ravines all intermingle to create an area worthy of further study.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii Clay Pan Herbaceous Vegetation	M	Brte	3
Pascopyrum smithii-Bouteloua gracilis-Carex filifolia	M	Brte	1,2
Populus deltoides-Fraxinus pennsylvanica Lowland Forest	LP		
Juniperus scopulorum Woodland	LP		
Pascopyrum smithii-Nasella viridula	LP		
Spartina pectinata Herbaceous Vegetation	LP		

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii* Clay Pan Herbaceous Vegetation  
**Secondary:** *Pascopyrum smithii*-*Bouteloua gracilis*-*Carex filifolia*

**Ownership Classification:** 4

**Exotic Comments:** In general, exotic species infestation levels moderate to high throughout. An exception is the West Plum Creek region.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 2

**Survey Intensity Comments:** Completed good geographic coverage of the polygon using standard sampling technique.

**Outstanding Sites:** West Plum Creek

## REA Summary Form

**Polygon Number:** 190 (SD)

**Polygon Description:**

Cheatgrass infestation levels of the *Pascopyrum smithii*-*Bouteloua gracilis* natural community of polygon 190 are extremely high in the eastern portion. Additionally, areas of *Agropyron cristatum* are frequent in this region. The western section of this polygon is much more representative of native prairie. Upper slopes and ridgetops often support the *Schizachyrium scoparium*-*Bouteloua spp.* plant association. Big bluestem is commonly dense and often present in the little bluestem community as well as on lower slopes. The *Fraxinus pennsylvanica*/*Prunus virginiana* community can be identified in many ravines. Deep Creek is a significant landscape feature located in the southwest portion of the polygon. *Juniperus scopulorum* woodlands occur in this region, but much native prairie and hardwoods remain. Green ash and cottonwood dominate the overstory along Deep Creek.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii-Bouteloua gracilis-Carex filifolia	M	Brte	3
Pascopyrum smithii Clay Pan Herbaceous Vegetation	M	Brte	3
Pascopyrum smithii-Nasella viridula	M		
Fraxinus pennsylvanica/Prunus virginiana	LP		
Juniperus scopulorum Woodland	LP		
Schizachrium scoparium-Bouteloua spp.	SP		
Populus deltoides-Fraxinus pennsylvanica Lowland Forest	LP		
Andropogon gerardii/Schizachrium scoparium	LP		

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Bouteloua gracilis* *Carex filifolia*  
**Secondary:** *Pascopyrum smithii* Clay Pan Herbaceous Vegetation

**Ownership Classification:** 4

**Exotic Comments:** Much of polygon has extremely high levels of exotic species infestation except for the Deep Creek region.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 2

**Survey Intensity Comments:** Completed good geographic coverage of the polygon using standard sampling technique.

**Outstanding Sites:** Deep Creek region.

REA Summary Form

Polygon Number: 191 (SD)

Polygon Description:

The wheatgrass association of *Pascopyrum smithii* Clay Pan Herbaceous Vegetation and *Pascopyrum smithii-Bouteloua gracilis* are most appropriate to describe polygon 191. Much of this prairie is severely degraded by extremely high cheatgrass levels. Most of the *Populus deltoides* and *Calamovilfa longifolia* communities along the Cheyenne River are fragmented by hay and cropland. *Juniperus scopulorum* woodlands and shale barrens were identified along the Cheyenne River. Shale barrens, additionally, are located in other regions of the polygon. The exception to the highly degraded condition of polygon 191 is the Elk Creek region. A *Pascopyrum smithii-Nasella viridula* natural community with *Schizachyrium scoparium* prevailing on many upper slopes dominated the region. *Spartina pectinata* and *Salix exigua* occurs along the creek with the *Populus deltoides/Fraxinus pennsylvanica* community evident in the upper canopy.

Polygon Natural Communities Summary:

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii Clay Pan Herbaceous Vegetation	M	Brte, Agcr	3,3,
Pascopyrum smithii-Bouteloua gracilis-Carex filifolia	M	Brte	3
Juniperus scopulorum Woodland	LP		
Populus deltoides/Fraxinus pennsylvanica Lowland Forest	LP		
Inland Shale Barrens	LP		
Pascopyrum smithii-Nasella viridula	M		
(Populus deltoides/Calamovilfa longifolia)	LP		
Schizachyrium scoparium-Bouteloua spp.	SP		
Spartina pectinata-Calamagrostis stricta-Carex spp.	SP		
Salix exigua Shrubland	SP		

Polygon Natural Community Classification:

Primary: Pascopyrum smithii Clay Pan Herbaceous Vegetation  
Secondary: Pascopyrum smithii-Bouteloua gracilis-Carex filifolia

Ownership Classification: 4

Exotic Comments: Much of polygon has extremely high levels of exotic species infestation except for the Elk Creek region.

Land-use Disturbance Rating: 1

Land-use Disturbance Comments: None

Cropland Conversion Rating: 2

Preliminary Conservation Significance Rating: 2

Survey Intensity Comments: Completed good geographic coverage of the polygon using standard sampling technique.

Outstanding Sites: Elk Creek region.

**REA Summary Form**

**Polygon Number:** 192 (SD)

**Polygon Description:**

The rolling prairie of this polygon is dominated by the *Pascopyrum smithii*-*Bouteloua gracilis* natural community. *Nasella viridula* also occurs, but appears to be limited to tracts receiving the least grazing pressure. Few woody ravines occur throughout the polygon with forested *Fraxinus pennsylvanica*-*Ulmus americana* areas sporadic in occurrence. Cottonwood with a wolfberry understory occurs along the Belle Fourche River. Regions of less canopy closure along the river support *Populus deltoides*/*Calamovilfa longifolia* or *P. deltoides*/*Pascopyrum smithii* natural communities. No *Juniperus scopulorum* or *Pinus ponderosa* was observed on the Belle Fourche River breaks. In contrast, both species can be found in this terrain further east along the river. The polygon appears to receive moderate to heavy livestock grazing pressure.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii-Bouteloua gracilis-Carex filifolia	M	Brte	3
Fraxinus pennsylvanica-Ulmus americana	LP		
Populus deltoides/Symphoricarpos occidentalis	LP	Brin,Brte	1,3
Populus deltoides/Calamovilfa longifolia	LP	Brin,Brte	2
Populus deltoides/Pascopyrum smithii	LP	Brin,Brte	2

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Bouteloua gracilis*-*Carex filifolia*  
**Secondary:**

**Ownership Classification:** 4

**Exotic Comments:** Infestation levels range from moderate to extremely high throughout the polygon.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 3

**Survey Intensity Comments:** Geographic coverage of the polygon using standard sampling technique was severely limited due to only one public access north-south road. Polygon orientation is predominantly east-west. Public road did not allow sampling of the eastern or western thirds of this polygon.

**Outstanding Sites:** None

## REA Summary Form

**Polygon Number:** 194 (SD)

**Polygon Description:**

Much of the shale soils of this polygon are dominated by the low species diversity *Pascopyrum smithii* Clay Pan Herbaceous Vegetation natural community. Upper slopes frequently support the *Schizachyrium scoparium-Bouteloua spp.* community. Inclusions of sparsely vegetated Inland Shale Barrens occur throughout. Wooded areas of green ash and cottonwood occur in ravines and along creeks. The *Artemisia cana/Pascopyrum smithii* community was observed sporadically along floodplain terraces not converted to hay or cropland. Low-lying prairie regions are vegetated by Alkaline Wet Meadow species including: *Distichlis spicata*, *Spartina pectinata*, *Hordeum jubatum*, and *Suaeda depressa*. An outstanding example of a diverse *Andropogon gerardii-Schizachyrium scoparium* natural community was identified on the western portion of the polygon. Additionally, an extensive *Symphoricarpos occidentalis* Shrubland can be found in the western portion.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Pascopyrum smithii</i> Clay Pan Herbaceous Vegetation	M	Brte	3
<i>Artemisia cana/Pascopyrum smithii</i>	LP		
<i>Populus Deltoides-Fraxinus pennsylvanica</i> Lowland Forest	LP		
Inland Shale Barren Slopes	LP		
<i>Schizachyrium scoparium-Bouteloua spp.</i>	LP		
<i>Andropogon gerardii-Schizachrium scoparium</i>	LP		
<i>Distichlis spicata-Hordeum jubatum</i>	SP		
<i>Spartina pectinata-Calamagrostis stricta-Carex spp.</i>	SP		
<i>Symphoricarpos occidentalis</i> Shrubland	SP		

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii* Clay Pan Herbaceous Vegetation

**Secondary:**

**Ownership Classification:** 4

**Exotic Comments:** Much of polygon has moderate to heavy levels of exotic species infestation on the eastern portion, but low to moderate on the western.

**Land Use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 1

**Survey Intensity Comments:** Completed good geographic coverage of the polygon using standard sampling technique.

**Outstanding Sites:** Excellent *Andropogon gerardii/Schizachrium scoparium* prairie

## REA Summary Form

**Polygon Number:** 198 (SD) (Polygon sampled by Paul Pooler, Range Conservationist, Lower Brule Agency. Bureau of Indian Affairs.)

**Polygon Description:**

A western wheatgrass mixedgrass vegetative layer dominated polygon 205. A matrix of *Pascopyrum smithii*-*Stipa comata* and *P. smithii*-*Bouteloua gracilis* dominated lower and mid-slopes. The *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* community occurred on upper slopes and ridgetops. Additionally, *Andropogon gerardii* was extensive on many lower slopes. The *Artemisia cana*/*Pascopyrum smithii* natural community was encountered on limited floodplain terraces. One occurrence of the *Sarcobatus vermiculatus* Shrubland community was observed.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii-Stipa comata	M	Brin, Brte, Agcr	2,2,2
Pascopyrum smithii-Bouteloua gracilis	M		
Stipa comata-Bouteloua gracilis-Carex filifolia	LP		
Artemisia cana/Pascopyrum smithii	LP		
Sarcobatus vermiculatus Shrubland	LP		

**Polygon Natural Community Classification:**

**Primary:** Pascopyrum smithii-Stipa comata

**Secondary:** Pascopyrum smithii-Bouteloua gracilis-Carex filifolia

**Ownership Classification:** 1

**Exotic Comments:** Much of polygon has low to moderate levels of exotic species infestation.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 3

**Survey Intensity Comments:** Completed good geographic coverage of the polygon using standard sampling technique.

**Outstanding Sites:** None

## REA Summary Form

**Polygon Number:** 199 (SD)

**Polygon Description:**

The majority of this polygon supports a matrix prairie consisting of the *Pascopyrum smithii*-*Bouteloua gracilis* and *Pascopyrum smithii*-*Nasella viridula* natural communities. Presence of *Nasella viridula* appears to be strongly determined by land management. Regions of lighter grazing pressure have significantly higher densities of *N. viridula*. Most rangeland observed appears to be heavily to very heavily grazed. The *Schizachyrium scoparium*-*Bouteloua spp.* community was identified on slopes and ridgetops of the rolling prairie. Drainage areas support a woody vegetation of green ash and cottonwood. Frequently, *Spartina pectinata* vegetated low-lying prairie and drainage regions of intermittent to perennial moisture.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii-Bouteloua gracilis-Carex filifolia	M	Brte	2
Pascopyrum smithii-Nasella viridula	M		
Populus deltoides-Fraxinus pennsylvanica Lowland Forest	LP		
Schizachyrium scoparium-Bouteloua spp.	LP		
Spartina pectinata-Calamagrostis stricta-Carex spp.	SP		

**Polygon Natural Community Classification:**

**Primary:** Pascopyrum smithii-Bouteloua gracilis-Carex filifolia  
**Secondary:** Pascopyrum smithii-Nasella viridula

**Ownership Classification:** 4

**Exotic Comments:** Infestation levels range from moderate to heavy throughout much of the polygon.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 3

**Survey Intensity Comments:** Completed good geographic coverage of the polygon using standard sampling technique.

**Outstanding Sites:** None

## REA Summary Form

**Polygon Number:** 200 (SD)

**Polygon Description:**

The rolling prairie of this polygon is dominated by the *Pascopyrum smithii*-*Nasella viridula* natural community. The Bad River floodplain and lower slopes support a *Pascopyrum smithii* Clay Pan Herbaceous Vegetation dominated by western wheatgrass and few other species. Shortgrass inclusions of *Bouteloua gracilis*-*Buchloe dactyloides* can be identified in regions receiving high grazing pressure. Many upper slopes display much *Schizachyrium scoparium* and are typed as the *Schizachyrium scoparium*-*Bouteloua spp.* community. Prairie Dog Creek, the Bad River, and other wooded regions support hardwoods of the *Populus deltoides*/*Fraxinus pennsylvanica* association.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii-Nasella viridula	M	Brte	2
Pascopyrum smithii Clay Pan Herbaceous Vegetation	M	Brte,Agcr	2,1
Stipa comata-Bouteloua gracilis-Carex filifolia	LP		
Populus deltoides-Fraxinus pennsylvanica Lowland Forest	LP		
Bouteloua gracilis-Buchloe dactyloides	SP		
Schizachyrium scoparium-Bouteloua spp.	SP		

**Polygon Natural Community Classification:**

**Primary:** Pascopyrum smithii-Bouteloua gracilis-Carex filifolia

**Secondary:** Pascopyrum smithii-Nasella viridula

**Ownership Classification:** 4

**Exotic Comments:** Infestation levels range from low to moderate throughout the polygon.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 3

**Survey Intensity Comments:** Completed fair geographic coverage of the polygon using standard sampling technique.

**Outstanding Sites:** None

## REA Summary Form

**Polygon Number:** 202 (SD)

**Polygon Description:**

The majority of this polygon supports a matrix prairie consisting of the *Pascopyrum smithii*-*Bouteloua gracilis* and *Pascopyrum smithii*-*Nasella viridula* natural communities. Patches of shortgrass, *Bouteloua gracilis*-*Buchloe dactyloides*, occur throughout. Slopes and ridgetops are often dominated by the *Schizachyrium scoparium*-*Bouteloua spp.* association. Most terraces along the Bad River have been converted to cropland. Sporadically in drainage regions and along the Bad River, the *Populus deltoides*/*Fraxinus pennsylvanica* wooded community can be identified. Much rangeland in the polygon appears to be heavily grazed.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii-Bouteloua gracilis-Carex filifolia	M	Brte	2
Pascopyrum smithii-Nasella viridula	M	Brte	1
Populus deltoides-Fraxinus pennsylvanica Lowland Forest	LP		
Schizachyrium scoparium-Bouteloua spp.	LP		
Bouteloua gracilis-Buchloe dactyloides	SP		
Spartina pectinata-Calamagrostis stricta-Carex spp.	SP		

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Bouteloua gracilis*-*Carex filifolia*  
**Secondary:** *Pascopyrum smithii*-*Nasella viridula*

**Ownership Classification:** 4

**Exotic Comments:** Infestation levels range from low to moderate throughout much of the polygon. *Agropyron cristatum* is also present at low to moderate levels.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 3

**Survey Intensity Comments:** Completed fair geographic coverage of the polygon using standard sampling technique. Public access was limited on northern portion of polygon.

**Outstanding Sites:** None

## REA Summary Form

**Polygon Number:** 204a (Wyo)

**Polygon Description:**

This polygon consists of gently rolling hills and broad valleys in shale bedrock, with sandstone outcrops in the south and west. The southern and western boundaries lie along an escarpment of sedimentary rock several hundred feet high. Grassland of the *Pascopyrum smithii*-*Bouteloua gracilis*/*Carex filifolia*, with ca. 10% *Artemisia tridentata* ssp. *wyominensis* canopy cover, forms the matrix vegetation in much of the polygon. On sandier soils, the matrix is grassland of *Stipa comata* and *Carex filifolia* with little or no *Bouteloua gracilis* (the *Stipa comata*-*Carex filifolia* association?), also with ca. 10% *A. tridentata* ssp. *wyominensis* canopy cover. On flats and gentle slopes with fine-textured soils, the matrix vegetation appears to be the *Atriplex gardneri*/*Pascopyrum smithii* association, although *Elymus lanceolatus* ssp. *lanceolatus* dominates some stands. Within these matrix types, several vegetation types occur as patches: *Artemisia pedatifida*/*Pascopyrum smithii* on shale flats and gentle slopes, *Pseudoroegneria spicata*-*Carex filifolia* on cobbly slopes and sandstone outcrops, *Artemisia tridentata* ssp. *wyominensis*/*Pascopyrum smithii* (with *Nasella viridula*) in draws, *Atriplex confertifolia* Wyoming Basins Shrubland (with *Artemisia tridentata* ssp. *wyominensis* and *Oryzopsis hymenoides*) and *Krascheninnikovia lanata* patches (with *Xylorhiza glabruscula* and *Oryzopsis contracta*) on shale slopes and ridges, *Juniperus osteosperma* woodlands (*J. osteosperma*/*Artemisia tridentata* ssp. *wyominensis* association and *J. osteosperma*/*Pseudoroegneria spicata* association) on sandstone outcrops, and *Pinus ponderosa*/*Pseudoroegneria spicata* woodlands on siliceous shale. Stream valleys contain patches of the *Artemisia tridentata* ssp. *tridentata*/*Pascopyrum smithii* association and the *Artemisia cana* ssp. *cana*/*Pascopyrum smithii* association on lower and intermediate terraces, and the *Sarcobatus vermiculatus vermiculatus*/*Pascopyrum smithii* association on the higher terraces. Along the North Platte River, small stands of *Populus angustifolia* woodland occur in the riparian zone with larger patches of the *Artemisia tridentata* ssp. *tridentata*/*Leymus cinereus* association and *Salix exigua* shrubland. Much of the sandy alluvium in the river valley supports a grass vegetation of *Stipa comata* and *Sporobolus cryptandrus*. The escarpment on the southeastern side of the polygon (the Shirley Rim) supports a matrix grassland of (probably) the *Festuca idahoensis*-*Pseudoroegneria spicata* association with patches of *Pseudotsuga menziesii* woodland (possibly the *P. menziesii*/*Symphoricarpos oreophilus* association) in alcoves and *Populus tremuloides* woodland on slopes and small hills.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Pascopyrum smithii</i> - <i>Bouteloua gracilis</i> / <i>Carex filifolia</i>	SP-M	Brte	2?
<i>Stipa comata</i> - <i>Carex filifolia</i> ?	LP-M	Brte	2?
<i>Sarcobatus vermiculatus</i> / <i>Pascopyrum smithii</i>	LP	Brte	2
<i>Atriplex gardneri</i> / <i>Pascopyrum smithii</i>	M	Brte	2?
<i>Pseudoroegneria spicata</i> - <i>Carex filifolia</i> ?	SP-LP	Brte	2?
<i>Artemisia tridentata</i> ssp. <i>tridentata</i> / <i>Pascopyrum smithii</i>	SP		
<i>Artemisia pedatifida</i> / <i>Pascopyrum smithii</i>	SP-LP	Brte	2?
<i>Artemisia tridentata</i> ssp. <i>wyominensis</i> /Mixed grass	SP	Brte	2?
<i>Salix exigua</i>	SP		
<i>Juniperus osteosperma</i> / <i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	LP	Brte	2?
<i>Juniperus osteosperma</i> / <i>Pseudoroegneria spicata</i>	LP	Brte	2?
<i>Pinus ponderosa</i> / <i>Pseudoroegneria spicata</i>	SP	Brte	?
<i>Populus angustifolia</i> woodland	SP		
<i>Artemisia tridentata</i> ssp. <i>tridentata</i> / <i>Leymus cinereus</i>	SP	Brte, Brin, Ciar	3?
<i>Artemisia cana</i> ssp. <i>cana</i> / <i>Pascopyrum smithii</i>	SP	Brte	?
<i>Atriplex confertifolia</i> Wyoming Basins Shrubland	SP		
<i>Krascheninnikovia lanata</i>	SP		
<i>Pseudotsuga menziesii</i> / <i>Symphoricarpos oreophilus</i> ?	SP		
<i>Populus tremuloides</i>	SP		
<i>Festuca idahoensis</i> - <i>Pseudoroegneria spicata</i>	SP		

**Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii*-*Bouteloua gracilis*/*Carex filifolia*  
**Secondary:** *Artemisia tridentata* ssp. *tridentata*/*Pascopyrum smithii*

**Ownership Classification:** 2

**Exotic Comments:** Cheatgrass (*Bromus tectorum*) is common to abundant throughout the grassland and shrubland vegetation, and co-dominates in places. *Cirsium arvense* and *Bromus inermis* var. *inermis* occur in the riparian zone along the North Platte River, and *Centaurea repens* occurs in agricultural areas.

**Land-use Disturbance Rating:** 3.

**Land-use Disturbance Comments:** An oil field is present in the south-central part of the polygon. The North Platte River has been impounded to form Alcova Reservoir in the western part of the polygon, and the river downstream from the dam has incised, resulting in a narrow riparian zone. Much of land that was formerly higher riparian zone is now in irrigated cropland. The Bates Hole Stock Driveway crosses the center of the polygon.

**Cropland Conversion Rating:** 2?

**Preliminary Conservation Significance Rating:** 3

**Survey Intensity Comments:** Rapid ecological survey was limited to the eastern and northern parts of the polygon, using a modified approach that involves driving stretches of public road and recording the distribution and abundance of vegetation types and exotic plants. The identity of the plant associations is uncertain because few locations were found for on-the-ground survey.

**Outstanding Sites:** None known.

**AREAS NEEDING FURTHER INVESTIGATION:**

1. Shirley Rim, along the southern boundary. This escarpment is the boundary between this polygon and the Shirley Basin (in the Wyoming Basins ecoregion) to the south, and it may contain a site that represents the mosaic of grasslands, shrublands, and woodlands typical of the escarpment. Such a site could be expanded north to include the mosaic of grasslands, sagebrush shrub stands, and saltbush shrub stands of this polygon, and south to meet the Shirley Basin West macrosite and include the grasslands of the Shirley Basin.

The riparian zone of the North Platte River has been seriously affected by the construction of Alcova Dam, and is unlikely to contain a site with representative riparian communities.

REA Summary Form

Polygon Number: 204b (Wyo)

Polygon Description:

This polygon consists mainly of rolling plains with broad stream valleys on interbedded shales and sandstones. Bedrock in the northeastern part of the polygon is saline shale, with an anticline of sandstone (Pine Mountain). Along the southern and southwestern boundary, broad flats run north and east from the Rattlesnake Mountains and the Sweetwater Plateau (both in the Wyoming Basins ecoregion). Grassland of the *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* association, with *Artemisia tridentata* ssp. *wyomingensis* canopy cover to ca. 25%, and *Artemisia nova* in places, forms the matrix on sandy soils in much of the polygon. Sagebrush cover is dense enough (>25%) to form patches of the *Artemisia tridentata* ssp. *wyomingensis*/*Stipa comata* association in patches. Similar vegetation apparently without *B. gracilis* (the *Stipa comata*-*Carex filifolia* association) occurs on sandstone outcrops in the southern part of the polygon. On finer-textured soils throughout the polygon, the matrix vegetation is grassland of the *Pascopyrum smithii*-*Bouteloua gracilis*/*Carex filifolia* association, with *Artemisia tridentata* ssp. *wyomingensis* cover to ca. 25%. Sagebrush is dense enough (>25% cover) in draws to form patches of the *Artemisia tridentata* ssp. *wyomingensis*/Mixed Grass association (with *Pascopyrum smithii* and *Bouteloua gracilis* as dominant species). Patches of the *Artemisia pedatifida*/*Pascopyrum smithii* association occur on flats. In the northern part, the *Pascopyrum smithii* and *Carex filifolia* vegetation apparently contains no *B. gracilis* and belongs to the *Pascopyrum smithii*-*Carex filifolia* association (with *Artemisia tridentata* ssp. *wyomingensis* cover <25%) and perhaps to an un-named *Artemisia tridentata* ssp. *wyomingensis*/*Pascopyrum smithii*-*Carex filifolia* association (*A. tridentata* cover >25%). At the southern end of the polygon, the matrix vegetation is a shrubland of *Artemisia nova* with some *A. tridentata* ssp. *wyomingensis* and an understory of *Pseudoroegneria spicata*, *Stipa comata*, and *Bouteloua gracilis* (the *A. nova*/*Pseudoroegneria spicata* association?). Sandstone outcrops in the southern part of the polygon support a matrix of *Pseudoroegneria spicata*-*Carex filifolia* bunchgrass grassland and *Pinus flexilis*/*Pseudoroegneria spicata* woodland. In the northern part, woodlands of the *Juniperus scopulorum*/*Pseudoroegneria spicata* (?) association and woodlands of *Pinus ponderosa* (*P. ponderosa*/*Pseudoroegneria spicata* association) grow on sandstone outcrops. Stream valleys contain the *Juncus balticus* association along channels; *Pascopyrum smithii*-*Nasella viridula*, *Artemisia cana* ssp. *cana*/*Pascopyrum smithii*, and *Artemisia tridentata* ssp. *tridentata*/*Pascopyrum smithii* associations on lower terraces; and the *Sarcobatus vermiculatus*/*Pascopyrum smithii* association on higher terraces.

Polygon Natural Communities Summary:

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Stipa comata</i> - <i>Bouteloua gracilis</i> - <i>Carex filifolia</i>	M	Brte, Brja	2?
<i>Pascopyrum smithii</i> - <i>Bouteloua gracilis</i> / <i>Carex filifolia</i>	LP-M	Brte, Brja	2?
<i>Artemisia nova</i> / <i>Pseudoroegneria spicata</i> ?	M		
<i>Sarcobatus vermiculatus</i> / <i>Pascopyrum smithii</i>	SP-LP	Brja	3?
<i>Pascopyrum smithii</i> - <i>Nasella viridula</i>	SP-LP		
<i>Artemisia pedatifida</i> / <i>Pascopyrum smithii</i>	SP	Brte, Brja	2?
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i> / <i>Stipa comata</i> ?	SP-LP	Brte, Brja	2?
( <i>Artemisia tridentata</i> ssp. <i>wyomingensis</i> / <i>Pascopyrum smithii</i> - <i>Carex filifolia</i> ?)	SP-LP	Brja	2?
<i>Pascopyrum smithii</i> - <i>Carex filifolia</i>	SP		
<i>Stipa comata</i> - <i>Carex filifolia</i> ?	LP		
<i>Pseudoroegneria spicata</i> - <i>Carex filifolia</i>	LP		
<i>Pinus flexilis</i> / <i>Pseudoroegneria spicata</i>	SP-LP		
<i>Juniperus scopulorum</i> / <i>Pseudoroegneria spicata</i>	SP		
<i>Artemisia cana</i> ssp. <i>cana</i> / <i>Pascopyrum smithii</i>	SP	Brja	2?
<i>Artemisia tridentata</i> ssp. <i>tridentata</i> / <i>Pascopyrum smithii</i>	SP		
<i>Juncus balticus</i>	SP		

**Polygon Natural Community Classification:**

**Primary:** *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* with *Artemisia tridentata* ssp. *wyomingensis*?

**Secondary:** *Artemisia nova*/*Pseudoroegneria spicata*

**Ownership Classification:** 3

**Exotic Comments:** Biennial brome grasses (*Bromus japonicus* and *B. tectorum*) are common throughout the grassland and shrubland vegetation, and co-dominate in patches. Canada thistle (*Cirsium arvense*) is present in riparian zones throughout the polygon.

**Land-use Disturbance Rating:** 3?

**Land-use Disturbance Comments:** Oil fields are located in the south-central, eastern, and northeastern parts of the polygon.

**Cropland Conversion Rating:** 3?

**Preliminary Conservation Significance Rating:** 3?

**Survey Intensity Comments:** Modified rapid ecological survey was conducted in all but the center of the polygon, by driving stretches of public roads and noting the distribution and abundance of vegetation types and exotic plants. Pine Mountain in the northeast was not surveyed. Identity of the plant associations is uncertain because little on-the-ground survey was carried out.

**Outstanding Sites:** None known at present.

**AREAS NEEDING FURTHER INVESTIGATION:**

The southern part of the polygon (T32N, R84-87W; T33N, R85-87W) may contain a site with a mix of vegetation types (*Artemisia nova* shrub type, *Stipa comata*-*Carex filifolia*, *Pascopyrum smithii*-*Carex filifolia*) peripheral to the Northern Great Plain Steppe ecoregion and characteristic of the Wyoming Basins ecoregion to the south.

## REA Summary Form

**Polygon Number:** 204c (Wyo)

**Polygon Description:**

This polygon contains a variety of landscapes. The western and northern parts, along the foot of the Bighorn Mountains, are a series of parallel sandstone and limestone ridges and shale strike valleys. The matrix vegetation there is grassland of the *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* association, with *Artemisia tridentata* ssp. *wyomingensis* canopy cover to 25%. In patches where the sagebrush cover exceeds 25%, the vegetation probably belongs to the *Artemisia tridentata* ssp. *wyomingensis*/*Stipa comata* association. Patches of the *Artemisia cana* ssp. *cana*/*Pascopyrum smithii* association grow in draws. In strike valleys, the matrix vegetation appears to be the *Stipa comata*-*Carex filifolia* association (with *Artemisia tridentata* ssp. *wyomingensis* present), and *B. gracilis* is a minor species or is absent. The sandstone and limestone outcrops support a mosaic of vegetation types: *Juniperus scopulorum* woodlands with *Pinus flexilis* and *P. ponderosa* in the overstory, and *Pseudoroegneria spicata* and *Pascopyrum smithii* in the understory (the *J. scopulorum*/*Pseudoroegneria spicata* association?) grow on sandstone dipslopes, and *Pinus flexilis*/*Pseudoroegneria spicata* woodlands (with *J. scopulorum* common in the overstory, and *Artemisia tridentata* ssp. *wyomingensis* and *A. nova* in the understory) occur on upper slopes and along rims. Stands of the *Artemisia nova*/*Pseudoroegneria spicata* association also grow on sandstone dipslopes, mixed with *Pseudoroegneria spicata* grasslands (probably the *P. spicata*-*Bouteloua gracilis* association at lower elevations and *P. spicata*-*Carex filifolia* association at higher elevations) containing *Artemisia nova* and *A. tridentata* ssp. *wyomingensis*. *Artemisia nova* shrub stands (probably the *A. nova*/*Pseudoroegneria spicata* association) cover a substantial area on limestone slopes. Grasslands of *Pascopyrum smithii* and *Carex filifolia* grow on flats. *Populus angustifolia* groves are present along the larger streams in strike valleys. Much of the native vegetation in the bottoms of strike valleys has been converted to irrigated hay meadows. The central and eastern parts consist of gently rolling plains and broad valleys in saline shales, and the matrix vegetation is *Artemisia pedatifida* and *Pascopyrum smithii* with *Sporobolus airoides* and *Puccinellia* sp. (the *A. pedatifida*/*Pascopyrum smithii* association?), with stands of the *Sarcobatus vermiculatus*/*Pascopyrum smithii* association in draws and valley bottoms, the *Atriplex gardneri*/*Pascopyrum smithii* association on hilltops, and the *Artemisia tridentata* ssp. *wyomingensis*/*Pascopyrum smithii* association and the *Pascopyrum smithii*-*Nasella viridula* association in draws and on gentle slopes. Large patches of the native vegetation have been converted to crested wheatgrass stands. In the south-central part, stabilized sand dunes cover much of the area, and support a matrix of *Artemisia cana* ssp. *cana*/*Stipa comata* shrub vegetation (with *Chrysothamnus viscidiflorus* ssp. *viscidiflorus*, *Sporobolus cryptandrus*, and *Eriogonum microthecum* var. *effusum*).

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Stipa comata</i> - <i>Bouteloua gracilis</i> - <i>Carex filifolia</i>	M	Brte, Brja	2?
<i>Artemisia pedatifida</i> / <i>Pascopyrum smithii</i>	SP-M	Brte, Brja, Hagl	2?
<i>Stipa comata</i> - <i>Carex filifolia</i> ?	M	Brte	1?
<i>Artemisia cana</i> ssp. <i>cana</i> / <i>Stipa comata</i> ?	M		
<i>Sarcobatus vermiculatus</i> / <i>Pascopyrum smithii</i>	SP-LP	Brja, Brte	3?
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i> / <i>Stipa comata</i> ?	SP-LP	Brte, Brja	?
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i> / <i>Pascopyrum smithii</i>	SP-LP	Brte, Brja	2?
<i>Artemisia nova</i> / <i>Pseudoroegneria spicata</i>	LP		
<i>Atriplex gardneri</i> / <i>Pascopyrum smithii</i>	SP	Brte, Brja, Hagl	2?
<i>Artemisia nova</i> / <i>Pseudoroegneria spicata</i>	SP-LP		
<i>Artemisia cana</i> ssp. <i>cana</i> / <i>Pascopyrum smithii</i>	SP	Brja, Brte	2?
<i>Juniperus scopulorum</i> / <i>Pseudoroegneria spicata</i> ?	SP-LP	Brte, Brja	2?
<i>Pseudoroegneria spicata</i> - <i>Bouteloua gracilis</i> ?	SP-LP		
<i>Pseudoroegneria spicata</i> - <i>Carex filifolia</i> ?	LP		
<i>Pinus flexilis</i> / <i>Pseudoroegneria spicata</i>	SP		
<i>Pascopyrum smithii</i> - <i>Carex filifolia</i>	SP	Brte	1?
<i>Populus angustifolia</i> woodland	SP		
<i>Pascopyrum smithii</i> - <i>Nasella viridula</i>	SP		

**Polygon Natural Community Classification:**

**Primary:** *Artemisia pedatifida*/*Pascopyrum smithii*?  
**Secondary:** *Artemisia nova*/*Pseudoroegneria spicata*

**Ownership Classification:** 2

**Exotic Comments:** *Bromus tectorum* and *B. japonicus* are common to abundant in the vegetation, the former primarily in the western part of the polygon. *Centaurea repens* is present along roads in the western part. In the east-central part, *Tamarix chinensis* grows on larger streams, and *Halogeton glomeratus* is present in the uplands.

**Land-use Disturbance Rating:** 2?

**Land-use Disturbance Comments:** Oil and gas fields are present in the western third of the polygon. Crested wheatgrass pastures have been planted in the central part.

**Cropland Conversion Rating:** 3?

**Preliminary Conservation Significance Rating:** 2?

**Survey Intensity Comments:** Modified rapid ecological survey (driving stretches of public roads and recording the distribution and abundance of vegetation types and exotic plants) was conducted in representative landscapes in the southwestern, central, and eastern parts of the polygon; geographic coverage of the polygon was only fair. Identity of the plant associations is uncertain because of a lack of time for on-the-ground survey.

**Outstanding Sites:** None known.

**AREAS NEEDING FURTHER INVESTIGATION:**

1. The western part of the polygon (T38N, R85&86W; T39N, R85&86W) may contain a site that represents the mosaic of vegetation types typical of the lower Bighorn Mountain foothills.
2. The central part of the polygon (T37-39N, R83&84W) may contain a site that represents the mosaic of vegetation types typical of rolling hills and valleys on saline shale. The South Fork of Powder River flows northeast through this part of the polygon and may represent a large, arid land stream.

## REA Summary Form

**Polygon Number:** 205 (SD) (Polygon sampled by Paul Pooler, Range Conservationist, Lower Brule Agency. Bureau of Indian Affairs.)

### **Polygon Description:**

A western wheatgrass mixedgrass vegetative layer dominated in polygon 205. A matrix of *Pascopyrum smithii*-*Stipa comata*, *Pascopyrum smithii* Clay Pan Herbaceous Vegetation, and *P. smithii*-*Bouteloua gracilis* dominated lower and mid-slopes. The *Schizachyrium scoparium*-*Bouteloua spp.* community occurred on upper slopes and ridgetops. Additionally, *Andropogon gerardii* was extensive on many lower slopes. *Spartina pectinata* and *Typha latifolia* dominated communities were observed in low-lying regions of the polygon.

### **Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii-Stipa comata	M	Brin, Brte, Agcr	2,2,2
Pascopyrum smithii Clay Pan Herbaceous Vegetation	M		
Pascopyrum smithii-Bouteloua gracilis	M		
Schizachyrium scoparium-Bouteloua spp.	SP		
Spartina pectinata-Calamagrostis stricta-Carex spp.	SP	Brin	3
Typha latifolia Herbaceous Vegetation	SP		

### **Polygon Natural Community Classification:**

**Primary:** Pascopyrum smithii-Stipa comata

**Secondary:** Pascopyrum smithii Clay Pan Herbaceous Vegetation

**Ownership Classification:** 1

**Exotic Comments:** Much of polygon has moderate to high levels of exotic species infestation.

**Land-use Disturbance Rating:** 1

**Land Use Disturbance Comments:** None

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 3

**Survey Intensity Comments:** Completed good geographic coverage of the polygon using standard sampling technique.

**Outstanding Sites:** None

## REA Summary Form

**Polygon Number:** 206 (SD)

**Polygon Description:**

There exists a substantial contrast between the southern and northern portions of polygon 206. Highly fragmented by cropland and heavily infested with cheatgrass, the southern portion of 206 displays an extremely altered state from good condition native prairie. In contrast, lands to the north exhibit large expanses of highly diverse native prairie. Exotic infestation levels are extremely low and an excellent *Andropogon gerardii-Schizachrium scoparium* natural community prevails. Lying just south of Midland along Ash Creek, this region is a striking contrast to adjacent lands without evidence of bluestem. These areas appear to be heavily utilized by livestock. Prairie drainage regions appear alkaline with pristine wet meadows. Ash Creek flows through this excellent prairie, but its condition was undetermined due to a lack of public access. Vegetative work on the northern portion of polygon 206 would reveal much information on the bluestem communities of South Dakota.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii-Bouteloua gracilis	M	Brin, Brte	3,3
Andropogon gerardii-Schizachyrium scoparium	M [in S portion]		
(Populus deltoides/Fraxinus pennsylvanica Lowland Forest)	LP		
Distichlis spicata-Hordeum jubatum	SP		

**Polygon Natural Community Classification:**

**Primary:** Pascopyrum smithii-Bouteloua gracilis

**Secondary:** Andropogon gerardii-Schizachyrium scoparium

**Ownership Classification:** 4

**Exotic Comments:** Southern portion of polygon has high levels of exotic species infestation. In contrast, the northern portion is in excellent condition with trace to low levels.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 1

**Survey Intensity Comments:** Completed good geographic coverage of the polygon using standard sampling technique.

**Outstanding Sites:** *Andropogon gerardii/Schizachrium scoparium* region

## REA Summary Form

**Polygon Number:** 208 (SD)

**Polygon Description:**

The majority of this polygon supports a matrix prairie consisting of the *Pascopyrum smithii*-*Bouteloua gracilis* natural community. Upper slopes and ridgetops, particularly on the northern portion, support a *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* association. Southern and western portions of the polygon are broken by sparsely vegetated badlands. Drainage areas support woody vegetation of green ash and cottonwood. Frequently, *Spartina pectinata* vegetated low-lying prairie and drainage regions of intermittent to perennial moisture. On the western portion of the polygon, drainage terraces may support the *Artemisia cana*/*Pascopyrum smithii* natural community. Artificial ponds and their associated wet meadows provide a water source for livestock. Wet meadow and drainage vegetation includes *Eleocharis spp.*, *Scirpus maritimus*, *Distichlis spicata*, and *Hordeum jubatum*. Regions of denser canopy on White Water Creek support *Populus deltoides*/*Symphoricarpos occidentalis* vegetation. More open areas are often densely vegetated with *Salix exigua*. Buffalo Gap National Grassland tracts are interspersed with private holdings.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii-Bouteloua gracilis-Carex filifolia	M	Brte	2
Great Plains Eroding Badlands	LP		
Stipa comata-Bouteloua gracilis/Carex filifolia	LP		
Populus deltoides/Fraxinus pennsylvanica Lowland Forest	LP		
Artemisia cana/Pascopyrum smithii	LP		
Populus deltoides/Symphoricarpos occidentalis	LP		
Spartina pectinata-Calamagrostis stricta-Carex spp.	SP		
Eleocharis palustris Herbaceous Vegetation	SP		
Distichlis spicata-Hordeum jubatum	SP		
Scirpus maritimus Herbaceous Vegetation	SP		
Salix exigua Shrubland	SP		

**Polygon Natural Community Classification:**

**Primary:** Pascopyrum smithii-Bouteloua gracilis-Carex filifolia

**Secondary:** Eroding Great Plains Badlands

**Ownership Classification:** 2

**Exotic Comments:** Infestation levels range from high to very high on southern and western prairie portions to low to moderate on the far northern portion.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 3

**Survey Intensity Comments:** Completed good geographic coverage of the polygon using standard sampling technique.

**Outstanding Sites:** None

## REA Summary Form

**Polygon Number:** 210 (SD)

**Polygon Description:**

The far eastern Wyoming portion of polygon 210, from the Old Woman Hills east, is a matrix of: 1) the *Pascopyrum smithii*-*Bouteloua gracilis* community on lower slopes and wide prairie expanses. 2) a *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* association on upper slopes and ridgetops, and 3) *Artemisia tridentata* integrating on both associations. Additionally, lower drainage areas often exhibit the *Artemisia cana*/*Pascopyrum smithii* community. Old Woman Hills also display the *Schizachyrium scoparium*-*Bouteloua gracilis* association on their slopes. Pine woodlands, with patches of the *Pinus ponderosa*/*Prunus virginiana* community on north-facing slopes, are found in this region as well. The western portion of 210 is dominated by the *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* community. *Artemisia tridentata* and *A. cana* occur in conjunction throughout this region. Waterways of the polygon, e.g. Buck Creek, Lance Creek et al., are wooded to varying degrees. Denser canopy areas display the *Populus deltoides*/*Symphoricarpos occidentalis* association and may open to a *Populus deltoides*/*Calamovilfa longifolia*-*Pascopyrum smithii*. Open floodplain terraces consist of *Calamovilfa longifolia*-*Pascopyrum smithii* vegetation. Moist areas are vegetated by *Spartina pectinata*, *Salix exigua*, *Typha latifolia*, *Scirpus tabernaemontani*, and/or *Carex* species. One region of the *Artemisia longifolia* Barrens community was observed south of Mule Creek. Wetlands occurring along Mule Creek appear to be in excellent condition. Further vegetative work could yield valuable information on communities present in polygon 210.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Stipa comata</i> - <i>Bouteloua gracilis</i> / <i>Carex filifolia</i>	M	Brte	3
<i>Pascopyrum smithii</i> - <i>Bouteloua gracilis</i> - <i>Carex filifolia</i>	M	Brte	1
<i>Artemisia cana</i> / <i>Pascopyrum smithii</i>		LP	
<i>Artemisia tridentata</i> / <i>Carex filifolia</i>	LP		
<i>Sarcobatus vermiculatus</i> / <i>Pascopyrum smithii</i>	LP		
<i>Artemisia tridentata</i> / <i>Stipa comata</i>	LP		
<i>Populus deltoides</i> / <i>Calamovilfa longifolia</i>	LP		
<i>Pinus ponderosa</i> Woodland	LP		
Eroding Great Plains Badlands	LP		
<i>Populus deltoides</i> / <i>Symphoricarpos occidentalis</i>	SP		
<i>Schizachyrium scoparium</i> - <i>Bouteloua</i> spp.	SP		
<i>Calamovilfa longifolia</i> - <i>Pascopyrum smithii</i>	SP		
<i>Pinus ponderosa</i> / <i>Prunus virginiana</i>	SP		
<i>Carex</i> spp. Wetland	SP		
<i>Spartina pectinata</i> - <i>Calamagrostis stricta</i> - <i>Carex</i> spp.	SP		
<i>Typha latifolia</i> Herbaceous Vegetation	SP		
<i>Salix exigua</i> Shrubland	SP		
<i>Scirpus tabernaemontani</i> Herbaceous Vegetation	SP		
<i>Artemisia longifolia</i> Barrens	SP		

**Polygon Natural Community Classification:**

**Primary:** *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia*  
**Secondary:** *Pascopyrum smithii*-*Bouteloua gracilis*-*Carex filifolia*

**Ownership Classification:** 4

**Exotic Comments:** Infestation levels are quite high on the western portion, but lower to the east.

**Land-use Disturbance Rating: 2**

**Land-use Disturbance Comments:** Oil field in the far southeast corner.

**Cropland Conversion Rating: 3**

**Preliminary Conservation Significance Rating: 2**

**Survey Intensity Comments:** Good geographic coverage of the polygon using standard sampling technique except the northern portion (Weston county) and the extreme eastern region (adjacent to NE/SD borders).

**Outstanding Sites:** Mule Creek & *Artemisia longifolia* community.

## REA Summary Form

**Polygon Number:** 211 (SD)

### **Polygon Description:**

The *Pascopyrum smithii*-*Bouteloua gracilis* prairie community is dominant throughout polygon 211. Much of the native prairie is intact with crop or hay land primarily limited to terraces along the White River. Most wider grassland ravines were vegetated by patches of *Spartina pectinata*. Wooded ravines contain green ash and cottonwood. Along the White River communities varied extensively. Heavily canopied areas of *Populus deltoides* contain *Symphoricarpos occidentalis* in the understory. More open regions of scattered cottonwood were vegetated with *Calamovilfa longifolia*, *Pascopyrum smithii*, or, on occasion, terraces of *Andropogon gerardii*. West of the White River, an excellent intact prairie was observed. In addition to the *Pascopyrum smithii*-*Bouteloua gracilis* community, large tracts of an *Andropogon gerardii* and *Calamovilfa longifolia* were visible.

### **Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii-Bouteloua gracilis-Carex filifolia	M	Brin, Brte	1,2
Populus deltoides-Fraxinus pennsylvanica lowland forest	LP		
(Populus deltoides/Calamovilfa longifolia)	LP		
Populus deltoides/Symphoricarpos occidentalis	SP		
Spartina pectinata Herbaceous Vegetation	SP		

### **Polygon Natural Community Classification:**

**Primary:** Pascopyrum smithii-Bouteloua gracilis-Carex filifolia

**Secondary:**

**Ownership Classification:** 4

**Exotic Comments:** In general, exotic species infestation levels are low to moderate throughout. An exception is moderate to high levels of smooth brome along waterways.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 1

**Survey Intensity Comments:** Completed good geographic coverage of the polygon using standard sampling technique.

**Outstanding Sites:** White River bison prairie.

## REA Summary Form

**Polygon Number:** 213 (NE/SD)

**Polygon Description:**

A matrix of grassland communities occur in polygon 213. Throughout much of the bounded region, *Pascopyrum smithii* dominates the vegetation. The co-dominant often appears to be closely tied to management regimes. Regions more heavily utilized by livestock display blue grama as the co-dominant. Less impacted areas exhibited sweeping prairies of *Nasella viridula*. Ridgetops and extremely heavily grazed regions support a shortgrass (*Bouteloua gracilis*-*Buchloe dactyloides*) community. Eroding Great Plains Badlands occur on the far northern boundary and may be quite numerous in occurrence. Plateaus and ravines in this region support coniferous woodland communities including: *Pinus ponderosa*/*Schizachyrium scoparium*, *P. ponderosa*/*Prunus virginiana*, *Juniperus scopulorum*/*Schizachyrium scoparium*, and others. Hardwood ravines were predominantly vegetated by the *Populus deltoides*/*Fraxinus pennsylvanica* community. Extremely dense canopy ravines may be vegetated by the *Fraxinus pennsylvanica*-*Ulmus americana* association. One occurrence of the *Artemisia cana*/*Pascopyrum smithii* community was observed along the floodplain of Janis Creek. Many watercourses, including the White River, displayed high to extremely high infestation levels of *Bromus inermis*. The pristine *Pascopyrum smithii*-*Nasella viridula* prairie, adjacent badlands and coniferous forests, and Limekiln Creek located near the northern state boundary, merit further vegetative study.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii-Bouteloua gracilis-Carex filifolia	M	Brte	2
Stipa comata-Bouteloua gracilis-Carex filifolia	M	Brte	1
Pascopyrum smithii-Nasella viridula	M	Brte	1
Eroding Great Plains Badlands	LP		
Pinus ponderosa/Schizachyrium scoparium	LP		
Populus deltoides-Fraxinus pennsylvanica	LP		
Juniperus scopulorum/Schizachyrium scoparium	LP		
Fraxinus pennsylvanica-Ulmus americana	LP		
Schizachyrium scoparium-Bouteloua spp.	SP		
Bouteloua gracilis-Buchloe dactyloides	SP		
Pinus ponderosa/Prunus virginiana	SP		
Artemisia cana/Pascopyrum smithii	SP		
Distichlis spicata-Hordeum jubatum	SP		
Artemisia tridentata/Bouteloua gracilis	SP		

**Polygon Natural Community Classification:**

**Primary:** Pascopyrum smithii-Bouteloua gracilis  
**Secondary:** Stipa comata-Bouteloua gracilis-Carex filifolia

**Ownership Classification:** 4

**Exotic Comments:** Infestation levels of *Bromus inermis* are quite high along the White River and other watercourses. Cheatgrass levels are very high in some areas, but low to moderate in general.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating: 1**

**Survey Intensity Comments:** Completed good geographic coverage of the polygon using standard sampling technique.

**Outstanding Sites:** Limekiln Creek.

**REA Summary Form**

**Polygon Number:** 214 (SD)

**Polygon Description:**

This polygon did not have public access for the central portion. A high viewing area from the western third did allow a comprehensive view of much of the central portion. The *Pascopyrum smithii*-*Bouteloua gracilis* community is dominant on much of the eastern third of polygon 214. Additionally, lower prairies on the western third are vegetated by this association. Upper prairies and floodplain terraces on the western third are much sandier in soil type and display the *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* association. This increased sand content is evident on Eagle Nest Creek. High *Calamovilfa longifolia* levels, in addition to sporadic occurrences of *Artemisia filifolia*, are indicative of this. Eroding Great Plains Badlands dominate a large portion of the interior of the polygon. Expansive and scenic vistas of the badlands community broken by *Pinus ponderosa*, *Juniperus scopulorum*, and *Fraxinus pennsylvanica* associations were viewed on the road north of Wamblee. Breathtaking in scope, this predominantly roadless area beckons for further vegetative study. South of Corn Creek, most watercourses and ravines are wooded by the *Quercus macrocarpa*/*Prunus virginiana* natural community. North of Corn Creek, oak is replaced by *Fraxinus pennsylvanica* in association with *Populus deltoides* or, on occasion, *Ulmus americana*. Floodplain terraces often support *Artemisia cana* in association with *Pascopyrum smithii* or, less frequently, *Stipa comata*. Prairie swales are vegetated by *Spartina pectinata*, *Eleocharis spp.*, and other wetland species.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii-Bouteloua gracilis-Carex filifolia	M	Brte, Agcr	2,1
Eroding Great Plains Badlands	LP		
Stipa comata-Bouteloua gracilis-Carex filifolia	M	Brte	2
Juniperus scopulorum/Carex inops ssp. heliophila	LP		
Fraxinus pennsylvanica-Ulmus americana	LP		
Populus deltoides-Fraxinus pennsylvanica	LP		
Pinus ponderosa/Schizachyrium scoparium	LP		
Artemisia cana/Pascopyrum smithii	LP		
(Juniperus scopulorum/Pascopyrum smithii)	LP		
(Juniperus scopulorum/Calamovilfa longifolia)	SP		
Schizachyrium scoparium-Bouteloua spp.	SP		
Calamovilfa longifolia-Pascopyrum smithii	SP		
Artemisia cana/Calamovilfa longifolia	SP		
Pinus ponderosa/Prunus virginiana	SP		
Spartina pectinata-Calamagrostis stricta-Carex spp.	SP		
Eleocharis palustris Herbaceous Vegetation	SP		

**Polygon Natural Community Classification:**

**Primary:** Pascopyrum smithii-Bouteloua gracilis-Carex filifolia  
**Secondary:** Eroding Great Plains Badlands

**Ownership Classification:** 1

**Exotic Comments:** Infestation levels are quite high throughout the polygon.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating: 3**

**Preliminary Conservation Significance Rating: 1**

**Survey Intensity Comments:** Good geographic coverage of the polygon using standard sampling technique was not possible in interior portions except by visual views.

**Outstanding Sites:** Wamblee Prairie/Badlands

REA Summary Form

Polygon Number: 216 (SD)

Polygon Description:

Clay soils support the *Pascopyrum smithii*-*Bouteloua gracilis* natural community in this polygon. Shortgrass regions, *Bouteloua gracilis*-*Buchloe dactyloides*, are scattered throughout and often appear to be in response to increased grazing pressure. Drainage regions cut through the prairie with silver sage and wheatgrass (*Artemisia cana*/*Pascopyrum smithii*) dominating associated floodplain terraces. Sparsely vegetated badlands are scattered throughout the polygon with some areas quite extensive. The White River traverses the southern boundary. *Populus deltoides* with *Symphoricarpos occidentalis*, *Calamovilfa longifolia*, and *Pascopyrum smithii* can be found along the river. Communities appear to vary with canopy closure. Lowland regions adjacent to the White River are often hayed or cultivated. *Juniperus scopulorum* woodlands occur on the White River breaks on the southern side of the river. They are very patchy in occurrence and usually confined to ravines. Buffalo Gap National Grassland tracts are interspersed with private holdings in this polygon.

Polygon Natural Communities Summary:

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii-Bouteloua gracilis-Carex filifolia	M	Brte	3
Eroding Great Plains Badlands	LP		
Artemisia cana/Pascopyrum smithii	LP	Brte	3
Populus deltoides/Symphoricarpos occidentalis	LP	Brte	3
Juniperus scopulorum Woodland	LP		
Bouteloua gracilis-Buchloe dactyloides	SP		
(Populus deltoides/Calamovilfa longifolia)	SP		
(Populus deltoides/Pascopyrum smithii)	SP		

Polygon Natural Community Classification:

Primary: Pascopyrum smithii-Bouteloua gracilis-Carex filifolia  
Secondary: Eroding Great Plains Badlands

Ownership Classification: 2

Exotic Comments: Infestation levels appear to be extremely high throughout much of the polygon.

Land-use Disturbance Rating: 1

Land-use Disturbance Comments: None

Cropland Conversion Rating: 3

Preliminary Conservation Significance Rating: 3

Survey Intensity Comments: Completed fair geographic coverage of the polygon using standard sampling technique.

Outstanding Sites: None

## REA Summary Form

**Polygon Number:** 218 (SD)

### **Polygon Description.**

The *Pascopyrum smithii*-*Nasella viridula* natural community dominates the rolling prairie of polygon 218. Dissected wooded ravines are vegetated by the *Quercus macrocarpa*/*Prunus virginiana* community with sporadic occurrences of green ash and elm. Low-lying prairie supports *Spartina pectinata*, *Distichlis spicata*, *Eleocharis* spp., and *Scirpus* species. *Juniperus scopulorum* woodlands, in addition to the *Juniperus scopulorum*/*Fraxinus pennsylvanica* Mixed Woodland, is exhibited on the White River breaks. An excellent example of an *Andropogon gerardii*-*Schizachyrium scoparium* natural community is found just out of polygon 218 adjacent to the White River. A *Populus deltoides*/*Symphoricarpos occidentalis* community was identified on the floodplain terrace of the White River in stands of denser canopy closure.

### **Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii-Nasella viridula	M	Brte	1
Pascopyrum smithii-Bouteloua gracilis-Carex filifolia	LP	Brte, Agcr	2,2
Quercus macrocarpa/Prunus virginiana	LP		
Andropogon gerardii-Schizachyrium scoparium	LP		
Juniperus scopulorum Woodland	LP		
Populus deltoides/Symphoricarpos occidentalis	LP		
Juniperus scopulorum/Fraxinus pennsylvanica Mixed Woodland	SP		
Spartina pectinata-Calamagrostis stricta-Carex spp.	SP		
Distichlis spicata-Hordeum jubatum	SP		

### **Polygon Natural Community Classification:**

**Primary:** Pascopyrum smithii-Nasella viridula

**Secondary:** Pascopyrum smithii-Bouteloua gracilis-Carex filifolia

**Ownership Classification:** 4

**Exotic Comments:** Much of polygon has low to moderate levels of exotic species infestation.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 3

**Survey Intensity Comments:** Completed good geographic coverage of the polygon using standard sampling technique.

**Outstanding Sites:** Excellent *Andropogon gerardii*/*Schizachyrium scoparium* prairie just outside of the bounded region.

## REA Summary Form

**Polygon Number:** 219 (SD)

### **Polygon Description:**

The Little White River and White Thunder Creek drain the majority of polygon 219. Ravines dissecting the prairie to these and other smaller watercourses are vegetated with the *Quercus macrocarpa/Prunus virginiana* community. Green ash and elm sporadically occur, but bur oak dominance is evident in the hardwood draws. Additionally, the oak and chokecherry association is found along the Little White River. In this region, the *Populus deltoides/Symphoricarpos occidentalis* community is also evident. Rolling prairie uplands support *Pascopyrum smithii* dominated vegetation. A matrix of western wheatgrass with *Nasella viridula* and *Bouteloua gracilis* occurs throughout the region with blue grama more dominant on tracts appearing more heavily grazed. *Nasella viridula* occurs more in association with wheatgrass on the far western portion of the polygon while blue grama is co-dominant throughout the central and eastern portions. Low-lying areas of higher moisture retention on the prairie support *Spartina pectinata*, *Eleocharis spp.*, and *Scirpus spp.* Prairie adjacent to the Little White River in the far northern portion of the polygon is vegetated with an excellent *Andropogon gerardii-Schizachyrium scoparium* community. Exotic infestation is low in this region and species diversity appears high. Sparsely vegetated eroding badlands are included in the sampled area. *Juniperus scopulorum* occurs in ravines dissecting the badlands regions.

### **Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii-Bouteloua gracilis-Carex filifolia	M	Brte	2
Pascopyrum smithii-Nasella viridula	M	Brte	1
Quercus macrocarpa/Prunus virginiana	LP		
Andropogon gerardii-Schizachyrium scoparium	LP		
Juniperus scopulorum Woodland	LP		
Populus deltoides/Symphoricarpos occidentalis	LP		
Spartina pectinata-Calamagrostis stricta-Carex spp.	SP		
Great Plains Eroding Badlands	LP		
Eleocharis palustris Herbaceous Vegetation	SP		
Distichlis spicata-Hordeum jubatum	SP		
Scirpus maritimus Herbaceous Vegetation	SP		

### **Polygon Natural Community Classification:**

**Primary:** Pascopyrum smithii-Bouteloua gracilis-Carex filifolia

**Secondary:** Pascopyrum smithii-Nasella viridula

**Ownership Classification:** 4

**Exotic Comments:** Infestation levels range from low to moderate throughout much of the polygon. Additionally, exceptional regions of no to trace amounts of exotic infestation exist in the polygon.

**Land-use Disturbance Rating:** 1

**Land Use Disturbance Comments:** None

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 1

**Survey Intensity Comments:** Completed good geographic coverage of the polygon using standard sampling technique.

## REA Summary Form

**Polygon Number:** 221 (SD)

**Polygon Description:**

*Stipa comata-Bouteloua gracilis-Carex filifolia* is the natural community dominating this polygon. Upland prairies are vegetated by this plant association with many areas also observed to support the *Schizachyrium scoparium-Bouteloua* spp. community. Pine woodlands dominate nearly all ravines. Often continuing up side slopes, these woodlands of *Pinus ponderosa/Schizachyrium scoparium* vegetation may contain more forest regions on northern slopes. In these areas, the vegetation is observed to be the *Pinus ponderosa/Prunus virginiana* natural community. Some ravines, particularly those containing perennial water, consisted of hardwood vegetation. Bear In The Lodge Creek, Yellow Bear Canyon, and No Flesh Creek all supported *Fraxinus pennsylvanica-Ulmus americana* Forest vegetation.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Stipa comata-Bouteloua gracilis-Carex filifolia</i>	M	Brte, Meof	2,1
<i>Pinus ponderosa/Schizachyrium scoparium</i>	LP		
<i>Fraxinus pennsylvanica-Ulmus americana</i> Forest	LP		
<i>Pinus ponderosa/Prunus virginiana</i>	SP		
<i>Schizachyrium scoparium-Bouteloua</i> spp.	SP		

**Polygon Natural Community Classification:**

**Primary:** *Stipa comata-Bouteloua gracilis-Carex filifolia*  
**Secondary:** *Pinus ponderosa/Schizachyrium scoparium*

**Ownership Classification:** 3

**Exotic Comments:** Infestation levels range from low to moderate throughout the polygon.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 3

**Preliminary Conservation Significance Rating:** 3

**Survey Intensity Comments:** Completed fair geographic coverage of the polygon using standard sampling technique. Some public roads were impassable during sampling.

**Outstanding Sites:** None

REA Summary Form

Polygon Number: 222 (SD)

Polygon Description:

Much of the open prairie of polygon 222 supports a Stipa comata-Bouteloua gracilis-Carex filifolia natural community heavily degraded by cheatgrass. Ravines are heavily wooded by a Quercus macrocarpa/Prunus virginiana community. Proceeding southerly and westerly, soil sand content increases substantially with characteristic species appearing, e.g. Andropogon hallii. In addition to hardwood ravines, pine woodlands and forests occur in the western portion of polygon 222. Pinus ponderosa/Schizachyrium scoparium woodlands were identified, but, in all likelihood, additional plot work may reveal unique communities due to the soil sand content. Oak stands are very dense and extensive, particularly in Crazy Horse Canyon. The Little White River supports an oak forest, in addition to cottonwood. Floodplain terraces often appear savanna-like in nature due to widely spaced oak trees occurring in the open grassland. Further vegetated work is needed in the Crazy Horse Canyon area of polygon 222.

Polygon Natural Communities Summary:

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Stipa comata-Bouteloua gracilis-Carex filifolia	M	Brte	2
Pinus ponderosa/Schizachyrium scoparium	LP		
Quercus macrocarpa/Prunus virginiana	LP		
Pinus ponderosa/Prunus virginiana	LP		

Polygon Natural Community Classification:

Primary: Stipa comata-Bouteloua gracilis-Carex filifolia  
Secondary: Pinus ponderosa/Schizachyrium scoparium

Ownership Classification: 1

Exotic Comments: In general, exotic species infestation levels are moderate to high on prairies, particularly adjacent to roads. An exception is the Crazy Horse Canyon region.

Land-use Disturbance Rating: 1

Land-use Disturbance Comments: None

Cropland Conversion Rating: 2

Preliminary Conservation Significance Rating: 1

Survey Intensity Comments: Completed good geographic coverage of the polygon using standard sampling technique.

Outstanding Sites: Crazy Horse Canyon & Little White River.

## REA Summary Form

**Polygon Number:** 224 (NE/SD)

### **Polygon Description:**

Rolling prairies of well-drained clayey soils weathered from shale are dissected with drainage regions of numerous small creeks flowing toward the White River. Eroding Great Plains Badlands are found on the western portion and adjacent to the *Populus deltoides/Symphoricarpos occidentalis* community of Big Cottonwood Creek and the White River. Grassland vegetation is predominantly a matrix of *Pascopyrum smithii*, i.e. *Pascopyrum smithii-Nasella viridula* and *P. smithii-Bouteloua gracilis*. Prairie wetlands, a few extensive, are located in drainage regions, particularly associated with artificial impoundments. Drainage areas are moderately to excessively alkaline in composition. *Hordeum jubatum*, *Distichlis spicata*, and *Suaeda depressa* are found on these Alkaline Wet Meadows. Regions of greater water depth periodically support *Scirpus tabernaemontani*, *Salix exigua*, and/or *Typha latifolia* plant communities. A small region of the *Artemisia tridentata/Pascopyrum smithii* natural community occurs in the northwest portion of the polygon.

### **Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Pascopyrum smithii-Nasella viridula	M	Brte	2
Pascopyrum smithii-Bouteloua gracilis-Carex filifolia	M	Brte	2
Eroding Great Plains Badlands	LP		
Populus deltoides/Symphoricarpos occidentalis	LP		
Artemisia tridentata/Pascopyrum smithii	LP		
Salix exigua Shrubland	SP		
Scirpus tabernaemontani Herbaceous Vegetation	SP		
Distichlis spicata-Hordeum jubatum	SP		
Typha latifolia Herbaceous Vegetation	SP		

### **Polygon Natural Community Classification:**

**Primary:** *Pascopyrum smithii-Nasella viridula*

**Secondary:** *Pascopyrum smithii-Bouteloua gracilis-Carex filifolia*

**Ownership Classification:** 4

**Exotic Comments:** Few areas of extremely high infestation levels by exotic species, but in general, low to moderate levels throughout the polygon.

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 2

**Survey Intensity Comments:** Completed good geographic coverage of the polygon using standard sampling technique.

**Outstanding Sites:** *Pascopyrum smithii/Nasella viridula* prairie

## REA Summary Form

**Polygon Number:** 230 (NE/SD)

**Polygon Description:**

The rolling prairie bounded by this polygon is the highest elevation prairie found within Nebraska. Certain grassland species, e.g. *Lupinus spp.*, are found more extensively on this prairie than other Nebraska prairies. Additionally, the Sandhills Dune Prairie located in polygon 230 is distinct from the Sandhills Dune Prairie of central Nebraska. Little previous vegetation work has occurred in this region. Many of the natural communities found here have not been previously described. Associations of the *Artemisia filifolia* alliance, e.g. *Artemisia filifolia/Calamovilfa longifolia*, *A. filifolia/Stipa comata*, *A. filifolia/Carex filifolia et al.*, can all be found here. Due to the uniqueness of this region, associations were grouped into the category 'Sandhills Dune Prairie' until further community work is performed. Just north of the Sandhills Dune Prairie, the increasing sand content of the soil is evidenced by the *Calamovilfa longifolia/Stipa comata* natural community. Much of the remaining prairie is composed of two *Stipa comata* natural associations: *Stipa comata-Bouteloua gracilis-Carex filifolia* and *Stipa comata-Bouteloua gracilis*. Prairie supporting the latter community exhibits an obvious lack of thread-leaf sedge. Much upper slope and ridgetop prairie displays enormously increased levels of *Carex filifolia*, regardless of the livestock management regime. The extent of this increase merits a more accurate description for this prairie region as a *Carex filifolia/Stipa comata* natural community. Eroding Great Plains Badlands rise sporadically in the polygon prairie. These are much more dense on the far western portion where they are a part of the Hat Creek formation. Many natural drainage regions, low-lying prairie, and artificial ponds support an Alkaline Wet Meadow vegetative community. Species present often include: *Distichlis spicata*, *Hordeum jubatum*, *Eleocharis palustris*, and *Scirpus pungens*. Along the White River and areas to the north adjacent to the Pine Ridge, numerous *Pinus ponderosa* natural woodland communities can be identified. Additionally, pine regions adjacent to open prairie often exhibit a grassland understory of *Stipa comata* and *Bouteloua gracilis*. Traversing easterly-westerly across polygon 230, the Niobrara River supports a variety of natural Alkaline Wet Meadow communities.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Stipa comata-Bouteloua gracilis-Carex filifolia</i>	M	Brte, Brin	2,1
(Sandhills Dune Prairie - includes: )	M		
<i>Artemisia filifolia/Calamovilfa longifolia</i>			
(Blow-outs)			
<i>Artemisia filifolia/Calamovilfa longifolia-Stipa comata-Carex filifolia</i>			
<i>Artemisia filifolia/Stipa comata/Bouteloua gracilis</i>			
<i>Artemisia filifolia/Carex filifolia</i>			
<i>Artemisia filifolia/Bouteloua gracilis et al.</i>			
<i>Stipa comata-Bouteloua gracilis</i>	LP		
( <i>Carex filifolia-Stipa comata</i> Ridgetop Prairie)	LP		
<i>Calamovilfa longifolia-Stipa comata</i>	LP		
<i>Calamovilfa longifolia-Carex filifolia</i>	LP		
<i>Artemisia cana/Stipa comata</i>	LP		
<i>Pinus ponderosa/Schizachyrium scoparium</i>	LP		
Eroding Great Plains Badlands	LP		
<i>Populus deltoides/Symphoricarpos occidentalis</i>	LP		
( <i>Pinus ponderosa/Stipa comata</i> )	LP		
<i>Pinus ponderosa/Carex inops ssp. heliophila</i>	LP		
<i>Eleocharis palustris</i> Herbaceous Vegetation	SP		
<i>Distichlis spicata-Hordeum jubatum</i>	SP		
<i>Scirpus pungens</i> Herbaceous Vegetation	SP		
<i>Typha latifolia</i> Herbaceous Vegetation	SP		
<i>Salix exigua</i> Shrubland	SP		

**Polygon Natural Community Classification:**

**Primary:** *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia*

**Secondary:** (Sandhills Dune Prairie)

**Ownership Classification:** 4

**Exotic Comments:** Regions north of highway 20 appear to have higher infestation levels than other regions. Additionally, south of Van Tassell just west of the Wyoming-Nebraska border, lands appear heavily utilized by livestock and have higher exotic species infestation levels..

**Land-use Disturbance Rating:** 1

**Land-use Disturbance Comments:** None

**Cropland Conversion Rating:** 2

**Preliminary Conservation Significance Rating:** 1

**Survey Intensity Comments:** Completed good geographic coverage of the polygon using standard sampling technique.

**Outstanding Sites:** Sandhills Dune Prairie, Sheep Creek, *Stipa comata*/*Bouteloua gracilis* Prairie et al

## REA Summary Form

**Polygon Number:** 231a (Wyo)

**Polygon Description:**

This polygon consists of broad surfaces sloping eastward off of the Laramie Range, with valleys incised by eastward-flowing streams. Elevation ranges from ca. 6,000 feet in the northwest to ca. 4760 feet on the eastern side. Local relief is ca. 200 feet. Geologic substrates are primarily sandy sediments of Miocene rocks, covered in many places with a cobble-and-boulder veneer. The matrix vegetation, on broad, gently-sloping uplands, is grassland of the *Stipa comata-Bouteloua gracilis-Carex filifolia* association. In the far southern end of the polygon, *Artemisia filifolia* is present in the grassland, and is dense enough in small patches in places to form an *Artemisia filifolia/Stipa comata-Bouteloua gracilis* type. In the northern part of the polygon, *Artemisia tridentata* ssp. *wyomingensis* and *Artemisia nova* both are present in the grassland, and large patches of the *Artemisia tridentata* ssp. *wyomingensis*/Mixed grass association (with *Stipa comata*, *Bouteloua gracilis*, and *Pascopyrum smithii* as dominant species) and a possible *Artemisia nova/Stipa comata-Bouteloua gracilis* association are present. Along the larger streams, *Populus deltoides* forms small to large patches at lower elevations throughout the polygon, and *Populus angustifolia* forms large patches on streams along the western edge. The *Sarcobatus vermiculatus/Sporobolus airoides* association (with *Bouteloua gracilis*) forms a few large patches in broad, mesic draws in the south. Draws throughout the polygon contain patches (from small to large) of the *Pascopyrum smithii-Nasella viridula* association and the *Artemisia cana* ssp. *cana/Pascopyrum smithii* association. Small patches of the *Prunus virginiana* association are present in draws along the western edge, as are small *Rhus trilobata* shrub stands with *Pascopyrum smithii* and *Bouteloua gracilis* in the understory.

Steep slopes with shallow soils in the central and northern part of the polygon support large patches of *Cercocarpus montanus* shrubs (perhaps the *C. montanus/Bouteloua curtipendula* association) small to large patches of *Pinus ponderosa* woodlands (of the *P. ponderosa/Schizachyrium scoparium* association?) stands of *Artemisia nova* with an understory of *Schizachyrium scoparium* and *Bouteloua curtipendula*, and large patches of the *Schizachyrium scoparium-Bouteloua curtipendula* association. Irrigated hay meadows are common in the valleys of larger streams, and may not appear on the land cover map. Dryland hay and grain fields, and crested wheatgrass pastures, have been planted on uplands in the central part of the polygon, and most show up on the land cover map.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Stipa comata-Bouteloua gracilis-Carex filifolia	M		2?
Schizachyrium scoparium-Bouteloua spp.-Carex filifolia?	LP		1?
Pinus ponderosa/Schizachyrium scoparium?	LP		1?
(Rhus trilobata/Stipa comata-Bouteloua gracilis)	SP		1?
Populus deltoides woodland	LP	Brin, Elan, others?	3?
Artemisia tridentata ssp. wyomingensis/Mixed grass	LP	Brja, Brte	2
(Rhus trilobata/Pascopyrum smithii-Bouteloua gracilis)	SP	Brja	2
Cercocarpus montanus/Bouteloua curtipendula?	LP		1
Prunus virginiana?	SP		1
(Artemisia nova/Schizachyrium scoparium?)	LP		1
Artemisia cana ssp. cana/Pascopyrum smithii	SP	Brja	3
(Artemisia nova/Mixed Grass?)	LP		
Pascopyrum smithii-Nasella viridula	LP		
Sarcobatus vermiculatus/Sporobolus airoides?	LP		
(Artemisia filifolia/Stipa comata-Bouteloua gracilis)	SP		

**Polygon Natural Community Classification:**

**Primary:** Stipa comata-Bouteloua gracilis-Carex filifolia

**Secondary:** Schizachyrium scoparium-Bouteloua spp.- Carex filifolia

**Ownership Classification:** 4.

**Exotic Comments:** Exotic plants (outside of planted hay or grain meadows) appear to be found in the following areas: (1) riparian cottonwood woodlands, where *Poa pratensis*, *Bromus inermis* var. *inermis*, and other hay grasses are common in the understories and may dominate, and *Elaeagnus angustifolia* is present in the tree layer; (2) in draws with *Pascopyrum smithii*-*Nassella viridula* vegetation or *Artemisia cana* ssp. *cana*/*Pascopyrum smithii* vegetation, where *Bromus japonicus*, (and, probably, *Poa pratensis*) may codominate the herbaceous layer; (3) in *Artemisia tridentata* ssp. *wyomingensis* shrub-steppe, where *Bromus japonicus* and *Bromus tectorum* dominate patches of the understory.

**Land-use Disturbance Rating:** 1.

**Land-use Disturbance Comments:** Disturbance appears to be limited to some petroleum pipelines and pumping stations, and roads (paved, graveled, two-track).

**Cropland Conversion Rating:** 2?

**Preliminary Conservation Significance Rating:** 1.

**Survey Intensity Comments:** Coverage was good in all but the northern quarter of the polygon, using a modified rapid ecological assessment methodology, which consisted of driving stretches of public roads to note the presence and extent of vegetation types, and quickly estimating cover in representative stands when possible. The sampling of representative stands was limited, and the identity of some vegetation types is questionable.

**Outstanding Sites:** None known at present.

**AREAS NEEDING FURTHER INVESTIGATION:**

1. The southern  $\frac{3}{4}$  of the sub-polygon, contains little agricultural land, and may contain a number of large sites that represent the matrix grasslands, the ponderosa pine woodlands, and the mountain mahogany shrub stands. Conservation sites in this long, narrow polygon may best be chosen to extend west onto the Laramie Mountain Range (in the Colorado Rocky Mountains Ecoregion).

**REA Summary Form**

**Polygon Number:** 231b (Wyo)

**Polygon Description:**

This polygon consists of rolling hills with local relief of 100 to 200 feet. Elevation ranges from ca. 4250 feet to ca. 4920 feet. Several large streams flow east through the polygon to the North Platte River along the eastern edge. Geologic substrates are primarily sandy sediments of Miocene rocks, covered in places with a cobble-and-boulder veneer. The matrix vegetation is grassland of the *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* association, with *Artemisia cana* ssp. *cana* and *A. filifolia* scattered throughout; both shrubs are dense enough in places to form shrub stands. Patches of *Calamovilfa longifolia*-*Stipa comata* vegetation and *Yucca glauca*/*C. longifolia* are present throughout the matrix. *Pinus ponderosa* stands (probably of the *P. ponderosa*/*Schizachyrium scoparium* association) grow on steep, rocky breaks, as do *Cercocarpus montanus* stands. *Populus deltoides* grows in small patches on the larger streams, and in large patches along the North Platte River.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Stipa comata</i> - <i>Bouteloua gracilis</i> - <i>Carex filifolia</i>	M	Brja, Brte	2
<i>Artemisia cana</i> ssp. <i>cana</i> / <i>Stipa comata</i> ?	LP	Brja,Brte	2?
<i>Calamovilfa longifolia</i> - <i>Stipa comata</i> ?	LP	Brja,Brte	2?
<i>Pinus ponderosa</i> / <i>Schizachyrium scoparium</i> ?	SP-LP		
<i>Populus deltoides</i>	SP-LP		
<i>Cercocarpus montanus</i>	SP-LP		
( <i>Artemisia filifolia</i> / <i>Stipa comata</i> - <i>Bouteloua gracilis</i> ?)	SP	Brte,Brja?	2?

**Polygon Natural Community Classification:**

**Primary:** *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia*

**Secondary:** *Artemisia cana* ssp. *cana*/*Stipa comata*

**Ownership Classification:** 3.

**Exotic Comments:** Two annual brome grasses, *Bromus japonicus* (?) and *B. tectorum*, are widespread throughout, and contribute substantial cover to the grassland types, where they dominate patches covering around 100 square meters.

**Land-use Disturbance Rating:** 2?

**Land-use Disturbance Comments:** The major disturbances throughout the polygon are paved and graveled roads, railroads, buried petroleum pipelines, and electric power lines. Gravel roads (and other disturbances) probably are especially dense in the national guard training area in the north-central part of the polygon. The Laramie River in the southeastern part has been dammed to form a reservoir covering ca. 3,000 acres.

**Cropland Conversion Rating:** 2?

**Preliminary Conservation Significance Rating:** 3.

**Survey Intensity Comments:** Only the southeastern part of the polygon was surveyed, using a modified rapid ecological assessment methodology consisting of driving stretches of public roads to note the distribution of different vegetation types. The identity of many of the vegetation types is uncertain because the small amount of accessible public lands limited the amount of on-the-ground survey.

**Outstanding Sites:** None known.

**REA Summary Form**

**Polygon Number:** 231c (Wyo)

**Polygon Description:**

This polygon consists of a northeast-southwest trending uplift of Paleozoic limestone, forming a landscape of broad ridges, moderate to steep slopes, and narrow to moderately-wide valleys up to several hundred feet deep. On the deep, sandy soils of the ridge tops and some slopes, grassland of the *Stipa comata-Bouteloua gracilis-Carex filifolia* association is the matrix, and draws contain patches of the *Pascopyrum smithii-Nasella viridula* association and the *Artemisia cana* ssp. *cana/Pascopyrum smithii* association. On shallow soils on slopes, the matrix vegetation is grassland of the *Schizachyrium scoparium-Bouteloua-Carex filifolia* association, and several vegetation types occur as large patches: *Cercocarpus montanus* shrub stands, woodlands of *Juniperus scopulorum*, and woodlands of the *Pinus ponderosa/Schizachyrium scoparium* association. Valleys support the *Stipa comata-Bouteloua gracilis-Carex filifolia* association with *Artemisia cana* ssp. *cana* shrub stands. Hay meadows have been planted in some valleys, and may not appear on the land cover map.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Stipa comata-Bouteloua gracilis-Carex filifolia	M		2?
Schizachyrium scoparium-Bouteloua-Carex filifolia	M		1?
Pinus ponderosa/Schizachyrium scoparium	LP		1?
(Cercocarpus montanus/Schizachyrium scoparium?)	LP		1?
Juniperus scopulorum/Schizachyrium scoparium?	LP		1?
Pascopyrum smithii-Nasella viridula	SP		
Artemisia cana ssp. cana/Pascopyrum smithii	SP	Brja,Brte	3?
Calamovilfa longifolia-Stipa comata?	SP		2?

**Polygon Natural Community Classification:**

**Primary:** Stipa comata-Bouteloua gracilis-Carex filifolia  
**Secondary:** Pinus ponderosa/Schizachyrium scoparium

**Ownership Classification:** 4

**Exotic Comments:** Exotic plant species (especially the annual brome grasses *Bromus japonicus* and *B. tectorum*) appear to be most common in the stands of the *Pascopyrum smithii-Nassella viridula* association and the *Artemisia cana* ssp. *cana/Pascopyrum smithii* association, which grow on finer-textured soils of draws. These brome grasses are present but less common throughout the other vegetation types.

**Land-use Disturbance Rating:** 2:

**Land-use Disturbance Comments:** The most common disturbances apparently are roads and other facilities associated with the national guard training area in the southern part of the polygon, and abandoned open-pit mines in the southeastern part.

**Cropland Conversion Rating:** 2?

**Preliminary Conservation Significance Rating:** 2?

**Survey Intensity Comments:** Coverage was good throughout the polygon, using a modified rapid ecological assessment that consists of driving stretches of public roads and noting the extent of vegetation types, disturbances, and exotics. The identity of some of the vegetation types, though, is uncertain, because on-the-ground surveys were conducted at only two places in the southern part of the polygon

**Outstanding Sites:** None known at present.

**AREAS NEEDING FURTHER INVESTIGATION:**

1. The western portion of the polygon (T28N, R66&67W; T29N, R66&67W) may contain a site, centered around the National Guard training area, that represents the mosaic of grasslands, shrub vegetation, juniper woodlands, and ponderosa pine woodlands typical of the limestone hills in the polygon.
2. The northern portion of the polygon (T30N, R64&65W; T31N, R64&65W), combined with adjoining parts of polygon 231e to the east, may contain a site representing the mosaic of grassland, shrublands, and ponderosa pine woodlands typical of the limestone hills.

## REA Summary Form

**Polygon Number:** 231d (Wyo)

### **Polygon Description:**

This polygon consists of rolling surfaces developed in sandy sediments, at elevations between ca. 5,000 and 5,600 feet. Local relief is less than 50 feet over most of the area, except for buttes ca. 500 feet tall in the southeastern corner. The matrix vegetation is grassland of the *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* association. *Artemisia cana* ssp. *cana* is scattered throughout, and forms moderately-dense patches in places. *Calamovilfa longifolia* forms small stands on sandy soils. Tilled land (primarily wheat fields and crested wheatgrass pastures or hay meadows, with a smaller acreage of oats) is present in large patches that appear on the land cover-type map.

### **Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
<i>Stipa comata</i> - <i>Bouteloua gracilis</i> - <i>Carex filifolia</i>	M		1
<i>Artemisia cana</i> ssp. <i>cana</i> / <i>Stipa comata</i> ?	SP-LP		1?
<i>Calamovilfa longifolia</i> - <i>Stipa comata</i> ?	SP		1?
<i>Rhus trilobata</i> / <i>Pseudoroegneria spicata</i> ?	SP		
<i>Schizachyrium scoparium</i> - <i>Bouteloua</i> spp.- <i>Carex filifolia</i> ?	SP		
<i>Pinus ponderosa</i> / <i>Schizachyrium scoparium</i> ?	LP		
<i>Yucca glauca</i> / <i>Calamovilfa longifolia</i> ?	SP		

### **Polygon Natural Community Classification:**

**Primary:** *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia*

**Secondary:** *Artemisia cana* ssp. *cana*/*Stipa comata*

**Ownership Classification:** 4.

**Exotic Comments:** Exotic plants appear to be uncommon outside of agricultural fields.

**Land-use Disturbance Rating:** 1.

**Land-use Disturbance Comments:** The major disturbances other than crop agriculture are roads, a petroleum pipeline, and electric power lines.

**Cropland Conversion Rating:** 1?

**Preliminary Conservation Significance Rating:** 2.

**Survey Intensity Comments:** Coverage was good throughout the polygon, using a modified rapid ecological assessment methodology that consisted of driving stretches of public roads to note the distribution and abundance of vegetation types and exotic species. The identity of many of those vegetation types is uncertain, though, because the lack of public lands prevented on-the-ground survey to confirm the observations made from the roads.

**Outstanding Sites:** None known at present.

### **AREAS NEEDING FURTHER INVESTIGATION:**

Given the relatively large proportion of the polygon that has been planted to crested wheatgrass and other exotic grasses, this polygon is unlikely to contain sites large enough to represent the mosaic of plant associations.

## REA Summary Form

**Polygon Number:** 231e (Wyo)

**Polygon Description:**

This polygon consists of rolling plains with hills in the north (the Rawhide Buttes), along the western edge, and in the southeast. Perennial streams run through the northern hills, and one (Rawhide Creek) flows north-south through the eastern part. The matrix vegetation throughout most of the polygon is the *Stipa comata-Bouteloua gracilis-Carex filifolia* association, on medium-textured and coarse-textured soils. The *Pascopyrum smithii-Bouteloua gracilis/Carex filifolia* association forms the matrix vegetation on finer-textured soils in the Twin Hills - Moore Springs Hills area on the western side of the polygon; from the perspective of the entire polygon, this type forms large patches. Small patches of *Calamovilfa longifolia* are present in the matrix, and on slopes and in swales. Tilled lands (mainly wheat fields and crested wheatgrass pastures, with smaller areas of irrigated hay meadows) form large patches in the matrix, and most or all of these patches appear on the land cover map. Slopes on resistant bedrock, mainly in the west, support vegetation of the *Schizachyrium scoparium-Bouteloua spp.-Carex filifolia* association. *Pinus ponderosa* woodlands are the matrix vegetation on the Rawhide Buttes in the northern part of the polygon, and on the hills in the south. Perennial stream support *Pascopyrum smithii* grassland, patches of cottonwood woodlands (*Populus angustifolia* in the northwest, and *P. deltoides* elsewhere, especially along Rawhide Creek), and patches of *Acer negundo* woodland.

**Polygon Natural Communities Summary:**

<u>Natural Community</u>	<u>Patch Size</u>	<u>Exotic Spp</u>	<u>Rating</u>
Stipa comata-Bouteloua gracilis-Carex filifolia	M	Brja, Brte	2?
Schizachyrium scoparium-Bouteloua spp.-Carex filifolia	SP-LP		1?
Pascopyrum smithii-Bouteloua gracilis/Carex filifolia	LP	Brja	2
Calamovilfa longifolia-Stipa comata?	SP		1?
Pinus ponderosa/Schizachyrium scoparium?	LP		1?
Populus angustifolia woodland	SP		
(Populus deltoides/Pascopyrum smithii?)	SP		
Pascopyrum smithii-Distichlis spicata?	SP		
Scirpus pungens Herbaceous vegetation	SP		1?
Acer negundo woodland	SP		

**Polygon Natural Community Classification:**

**Primary:** Stipa comata-Bouteloua gracilis-Carex filifolia  
**Secondary:** Schizachyrium scoparium-Bouteloua spp.-Carex filifolia

**Ownership Classification:** 4.

**Exotic Comments:** Biennial brome grasses (*Bromus japonicus* and *B. tectorum*) are widespread in the grasslands of the rolling uplands, especially in the *Pascopyrum smithii-Bouteloua gracilis/Carex filifolia* association, and to a lesser extent in the *Stipa comata-Bouteloua gracilis-Carex filifolia* association. Perennial grasses (*Poa pratensis* and *Bromus inermis*) probably are common in the riparian *Populus spp.* and *Acer negundo*, and in the *Pascopyrum smithii-Distichlis stricta* herbaceous vegetation)

**Land-use Disturbance Rating:** 1.

**Land-use Disturbance Comments:** Disturbances other than plowing are limited, and consist mostly of roads, electric power lines, and buried petroleum pipelines.

**Cropland Conversion Rating:** 2?

**Preliminary Conservation Significance Rating: 2.**

**Survey Intensity Comments:** Coverage was good in all but the southeastern quarter of the polygon, using a modified rapid ecological assessment methodology, which consisted of driving stretches of public roads to note the presence and extent of vegetation types. The identity of many of those vegetation types is uncertain, though, because the lack of public lands prevented on-the-ground survey to confirm the observations made from the roads.

**Outstanding Sites:** None known at present

**AREAS NEEDING FURTHER INVESTIGATION:**

1. The hills in the southern part of the polygon (T26N, R63W; T27N, R63&64W) may contain a site that represents the mosaic of grasslands and ponderosa pine woodlands.
2. The northeastern corner of the polygon (T29&30N, R62W) may contain a large enough site free of agricultural land to represent the mosaic of *Stipa comata-Bouteloua gracilis-Carex filifolia* matrix with patches of other vegetation types.
3. The Rawhide Buttes in the northern end of the polygon (T30N, R64W), combined with the area to the west in polygons 231c and 231d, may contain a site that represents the mosaic of ponderosa pine woodlands, shrublands, and grasslands typical of these crystalline and limestone hills.

Appendix C. Natural Community Associations and Frequency of Occurrence within Landscapes Sampled in the Northern Great Plains Steppe Ecoregion.

<u>Natural Community</u>	<u>Frequency</u>
Stipa comata - Bouteloua gracilis - Carex filifolia Herbaceous Vegetation	83
Artemisia cana ssp. cana/Pascopyrum smithii Shrub Herbaceous Vegetation	74
Pascopyrum smithii - Nasella viridula Herbaceous Vegetation	73
Pascopyrum smithii - Bouteloua gracilis/Carex filifolia Herbaceous Vegetation	58
S. scoparium - Bouteloua spp. (curtipendula, gracilis)/Carex filifolia Herbaceous Vegetation	47
Symphoricarpos occidentalis Shrubland	44
Pascopyrum smithii - Stipa comata Central Mixedgrass Herbaceous Vegetation	38
Populus deltoides - Fraxinus pennsylvanica Forest/Woodland	36
Eroding Great Plains Badlands Sparse Vegetation	35
Spartina pectinata - Calamagrostis stricta - Carex spp. Great Plains Herbaceous Vegetation	34
Prunus virginiana Shrubland	31
Artemisia tridentata/Pascopyrum smithii Shrub Herbaceous Vegetation	30
Fraxinus pennsylvanica - (Ulmus americana)/Prunus virginiana Woodland	30
Calamovilfa longifolia - Carex filifolia Herbaceous Vegetation	27
Shepherdia argentea Shrubland	27
Andropogon gerardii - Schizachyrium scoparium (Western Great Plains) Herbaceous Vegetation	26
Eleocharis palustris Herbaceous Vegetation	26
Sarcobatus vermiculatus/Pascopyrum smithii Shrub Herbaceous Vegetation	24
Pascopyrum smithii Herbaceous Vegetation	23
Populus deltoides/Symphoricarpos occidentalis Floodplain Woodland	22
Pinus ponderosa/Pseudoroegneria spicata Woodland	21
Distichlis spicata - Hordeum jubatum - Sporobolus airoides Saline Herbaceous Vegetation	20
Juniperus horizontalis/Schizachyrium scoparium Dwarf-shrubland	20
Distichlis spicata var. stricta Herbaceous Vegetation	18
Pinus ponderosa/Schizachyrium scoparium Woodland	18
Artemisia tridentata ssp. wyomingensis/Mixed Grass Shrub Herbaceous Vegetation	16
Quercus macrocarpa/Prunus virginiana Northern Ravine Woodland	16
Salix exigua Shrubland	16
Scirpus pungens Herbaceous Vegetation	15
Spartina pectinata - Scirpus pungens Herbaceous Vegetation	15
Typha latifolia Herbaceous Vegetation	15
Calamovilfa longifolia - Stipa comata Herbaceous Vegetation	13
(Populus deltoides/Pascopyrum smithii)	13
Populus tremuloides/Prunus virginiana Forest	13
Pinus ponderosa/Prunus virginiana Forest	12
(Elymus lanceolatus - Stipa comata)	11
Juniperus scopulorum/Oryzopsis micrantha Woodland	11
(Spartina pectinata)	11
Artemisia cana/Stipa comata Shrub Herbaceous Vegetation	10
Carex atherodes Herbaceous Vegetation	10
Juncus balticus Herbaceous Vegetation	10
Populus deltoides/Calamovilfa longifolia	10
Yucca glauca/Shrub Herbaceous Vegetation	10
Artemisia tridentata ssp. wyomingensis/Pascopyrum smithii Shrubland	9
Rhus trilobata/Pseudoroegneria spicata Shrub Herbaceous Vegetation	9
Scirpus maritimus Herbaceous Vegetation	9
(Schizachyrium scoparium - Carex filifolia Herbaceous Vegetation)	9
Schizachyrium scoparium - Muhlenbergia cuspidata Herbaceous Vegetation	9

Appendix C. (contd)

<u>Natural Community</u>	<u>Frequency</u>
Fraxinus pennsylvanica - (Ulmus americana) - Acer negundo Forest	8
Pinus ponderosa/Carex inops ssp. heliophila Woodland	8
Scirpus spp. - Typha spp. Mixed Inland Great Plains Herbaceous Vegetation	8
Andropogon gerardii - Schizachyrium scoparium - Panicum virgatum Herbaceous Vegetation	7
Crataegus chrysoarpa	7
(Elymus lanceolatus - Bouteloua gracilis Herbaceous Vegetation)	7
Pascopyrum smithii - Distichlis spicata Herbaceous Vegetation	7
(Scirpus tabernaemontani Herbaceous Vegetation)	7
Stipa comata - Bouteloua gracilis Herbaceous Vegetation	7
Acer negundo/Prunus virginiana Forest	6
Amelanchier alnifolia Shrubland	6
Artemisia pedatifida/Pascopyrum smithii Dwarf-shrubland	6
Artemisia tridentata - Atriplex confertifolia Shrubland	6
Artemisia tridentata ssp. wyomingensis/Elymus lanceolatus ssp. albicans Shrubland	6
Calamovilfa longifolia - Carex inops ssp. heliophila Herbaceous Vegetation	6
Calamovilfa longifolia - Pascopyrum smithii Herbaceous Vegetation	6
Hordeum jubatum Herbaceous Vegetation	6
Juniperus horizontalis Dwarf-shrubland	6
Pascopyrum smithii - (Elymus trachycaulus) Clay Pan Herbaceous Vegetation	6
Pinus ponderosa/Juniperus scopulorum Woodland	6
(Populus deltoides/Salix spp.)	6
Pseudoroegneria spicata - Carex filifolia Herbaceous Vegetation	6
(Schizachyrium scoparium - Bouteloua gracilis Herbaceous Vegetation)	6
(Stipa comata - Carex filifolia Herbaceous Vegetation)	6
Typha spp. Inland Great Plains Herbaceous Vegetation	6
Artemisia tridentata ssp. wyomingensis/Bouteloua gracilis Shrubland	5
Artemisia tridentata/Stipa comata Shrubland	5
Atriplex confertifolia Shrubland	5
Atriplex gardneri Dwarf-shrubland	5
Bouteloua gracilis - Buchloe dactyloides Herbaceous Vegetation	5
(Fraxinus pennsylvanica/Symphoricarpos occidentalis)	5
(Rhus aromatica)	5
Scirpus acutus Herbaceous Vegetation	5
Artemisia cana ssp. cana/Calamovilfa longifolia Shrub Herbaceous Vegetation	4
(Acer negundo/Symphoricarpos occidentalis)	4
Artemisia longifolia Sparse Vegetation	4
Artemisia tridentata ssp. wyomingensis/Pseudoroegneria spicata Shrub Herbaceous Vegetation	4
Atriplex gardneri/Pascopyrum smithii Dwarf-shrubland	4
Eleagnus commutata Wetland Shrubland	4
Juniperus scopulorum/Pseudoroegneria spicata Woodland	4
(Pseudoroegneria spicata - Bouteloua gracilis Herbaceous Vegetation)	4
Pascopyrum smithii - Eleocharis spp. Herbaceous Vegetation	4
Pseudoroegneria spicata - Stipa comata Herbaceous Vegetation	4
(Puccinellia nuttalliana)	4
(Artemisia cana/Elymus lanceolatus)	3
Artemisia cana/Pascopyrum smithii Shrub Herbaceous Vegetation	3
Artemisia tridentata ssp. wyomingensis/Carex filifolia Shrubland	3
(Artemisia tridentata ssp. wyomingensis)/Opuntia polyacantha)	3
Artemisia tridentata ssp. tridentata/Pseudoroegneria spicata Shrub Herbaceous Vegetation	3
Deschampsia cespitosa Herbaceous Vegetation	3

Appendix C. (contd)

<u>Natural Community</u>	<u>Frequency</u>
Eleagnus commutata/Pascopyrum smithii Shrubland	3
Elymus lanceolatus - Nasella viridula	3
Eriogonum pauciflorum/Elymus lanceolatus	3
(Juniperus horizontalis/Carex filifolia)	3
Juniperus horizontalis/Carex inops ssp. heliophila Dwarf-shrubland	3
(Juniperus horizontalis/Pascopyrum smithii)	3
(Juniperus scopulorum/Schizachyrium scoparium)	3
Pentaphylloides floribunda/Festuca scabrella Shrub Herbaceous Vegetation	3
Pinus flexilis/Pseudoroegneria spicata Woodland	3
Pinus ponderosa/Festuca idahoensis Woodland	3
Pinus ponderosa/Juniperus horizontalis Woodland	3
Pinus ponderosa/Symphoricarpos occidentalis Forest	3
Potamogeton spp. - Ceratophyllum demersum Great Plains Herbaceous Vegetation	3
Potamogeton pectinatus - Ruppia maritima Herbaceous Vegetation	3
(Prunus americana)	3
Pseudoroegneria spicata - Pascopyrum smithii Herbaceous Vegetation	3
Salix amygdaloides Woodland	3
Sarcobatus vermiculatus/Artemisia tridentata Shrubland	3
Sarcobatus vermiculatus/Elymus lanceolatus Shrub Herbaceous Vegetation	3
Scirpus maritimus - Scirpus acutus- (Triglochin maritima) Herbaceous Vegetation	3
(Spartina pectinata)	3
Artemisia nova/Pseudoroegneria spicata Dwarf-Shrubland	2
(Artemisia tridentata/Muhlenbergia cuspidata)	2
Bouteloua gracilis (Shortgrass Prairie) Herbaceous Vegetation	2
Calamagrostis stricta - Carex sartwellii - Carex praegracilis - Plantago eriopoda Saline Herbaceous Vegetation	2
(Calamovilfa longifolia - Elymus lanceolatus Herbaceous Vegetation)	2
(Calamovilfa longifolia - Schizachyrium scoparium)	2
Carex aquatilis Herbaceous Vegetation	2
Carex nebrascensis Herbaceous Vegetation	2
Crataegus douglasii Shrubland	2
(Chrysothamnus nauseosus/Elymus lanceolatus)	2
(Elymus lanceolatus Herbaceous Vegetation)	2
(Elymus lanceolatus - Carex filifolia)	2
Festuca idahoensis - Pseudoroegneria spicata Herbaceous Vegetation	2
Festuca scabrella - Festuca idahoensis Herbaceous Vegetation	2
Festuca scabrella - Pseudoroegneria spicata Herbaceous Vegetation	2
Fraxinus pennsylvanica/Prunus virginiana Forest	2
(Juncus balticus - Carex praegracilis)	2
(Muhlenbergia cuspidata - Stipa comata)	2
(Pascopyrum smithii - Carex filifolia)	2
Pascopyrum smithii - Hordeum jubatum Herbaceous Vegetation	2
Pinus ponderosa/Mahonia repens Forest	2
(Pentaphylloides floribunda/Schizachyrium scoparium Shrub Herbaceous Vegetation)	2
Populus tremuloides/Cornus sericea Forest	2
Pseudotsuga menziesii/Symphoricarpos albus Forest	2
Pseudoroegneria spicata - Muhlenbergia cuspidata Herbaceous Vegetation	2
Rhus trilobata/Schizachyrium scoparium Shrub Herbaceous Vegetation	2
Sarcobatus vermiculatus/Pseudoroegneria spicata Shrubland	2
Sarcobatus vermiculatus/Atriplex gardneri Shrubland	2
Schizachyrium scoparium - Carex inops ssp. heliophila Herbaceous Vegetation	2

Appendix C. (contd)

<u>Natural Community</u>	<u>Frequency</u>
<i>Scolochloa festucacea</i> Herbaceous Vegetation	2
<i>Stipa comata</i> - <i>Carex inops</i> ssp. <i>heliophila</i> Herbaceous Vegetation	2
<i>Abies lasiocarpa</i> / <i>Symphoricarpos albus</i> Forest	1
<i>Andropogon hallii</i> - <i>Calamovilfa longifolia</i> Herbaceous Vegetation	1
<i>Artemisia cana</i> / <i>Carex inops</i> ssp. <i>heliophila</i> Shrub Herbaceous Vegetation	1
<i>Artemisia tridentata</i> / <i>Festuca scabrella</i> Shrub Herbaceous Vegetation	1
<i>Atriplex confertifolia</i> / <i>Chrysothamnus nauseosus</i> Shrubland	1
<i>Betula occidentalis</i> Shrubland	1
<i>Betula occidentalis</i> - <i>Juniperus horizontalis</i> / <i>Calamovilfa longifolia</i> Shrubland	1
<i>Calamagrostis canadensis</i> Herbaceous Vegetation	1
( <i>Carex aquatilis</i> - <i>Carex</i> spp. Rich Fen)	1
( <i>Carex praegracilis</i> )	1
<i>Carex rostrata</i> Herbaceous Vegetation	1
<i>Cercocarpus montanus</i> / <i>Bouteloua curtipendula</i> Shrubland	1
( <i>Cercocarpus montanus</i> / <i>Schizachyrium scoparium</i> )	1
<i>Chrysothamnus nauseosus</i> / <i>Pseudoroegneria spicata</i> Shrubland	1
<i>Crataegus succulenta</i> Shrubland	1
<i>Festuca scabrella</i> Herbaceous Vegetation	1
( <i>Festuca scabrella</i> - <i>Pascopyrum smithii</i> Herbaceous Vegetation)	1
( <i>Festuca viridula</i> - <i>Nasella viridula</i> )	1
( <i>Iva axilaris</i> / <i>Rumex salicifolius</i> )	1
( <i>Juniperus horizontalis</i> / <i>Calamovilfa longifolia</i> )	1
( <i>Juniperus osteosperma</i> / <i>Artemisia tridentata</i> Woodland)	1
( <i>Juniperus osteosperma</i> / <i>Pseudoroegneria spicata</i> )	1
<i>Juniperus scopulorum</i> / <i>Artemisia tridentata</i> Woodland	1
( <i>Juniperus scopulorum</i> / <i>Carex inops</i> ssp. <i>heliophila</i> )	1
( <i>Juniperus scopulorum</i> / <i>Calamovilfa longifolia</i> )	1
( <i>Koeleria macrantha</i> - <i>Phlox hoodii</i> )	1
<i>Leymus cinereus</i> - <i>Pascopyrum smithii</i> Herbaceous Vegetation	1
( <i>Muhlenbergia cuspidata</i> - <i>Bouteloua gracilis</i> )	1
( <i>Picea x glauca</i> / <i>Calamagrostis canadensis</i> )	1
<i>Picea x glauca</i> / <i>Cornus sericea</i> Forest	1
<i>Pinus flexilis</i> / <i>Festuca idahoensis</i> Woodland	1
<i>Pinus ponderosa</i> / <i>Amelanchier alnifolia</i> Woodland	1
<i>Pinus ponderosa</i> / <i>Juniperus communis</i> Woodland	1
<i>Pinus ponderosa</i> / <i>Pascopyrum smithii</i> Woodland	1
<i>Pinus ponderosa</i> / <i>Quercus macrocarpa</i> Woodland	1
( <i>Pinus ponderosa</i> / <i>Stipa comata</i> Woodland)	1
<i>Populus angustifolia</i> / <i>Cornus sericea</i> Woodland	1
( <i>Populus balsamifera</i> )	1
<i>Populus deltoides</i> / <i>Cornus sericea</i> Forest	1
( <i>Populus tremuloides</i> / <i>Calamagrostis canadensis</i> )	1
<i>Populus tremuloides</i> / <i>Calamagrostis rubescens</i> Forest	1
<i>Populus tremuloides</i> / <i>Mahonia repens</i> Forest	1
<i>Populus tremuloides</i> / <i>Osmorhiza occidentalis</i> Forest	1
<i>Populus tremuloides</i> / <i>Symphoricarpos albus</i> Forest	1
( <i>Populus trichocarpa</i> / <i>Symphoricarpos occidentalis</i> )	1
( <i>Populus trichocarpa</i> /herbaceous)	1
( <i>Prunus pumila</i> )	1
<i>Pseudoroegneria spicata</i> - <i>Bouteloua curtipendula</i> Herbaceous Vegetation	1

Appendix C. (contd)

<u>Natural Community</u>	<u>Frequency</u>
Pseudoroegneria spicata - Bouteloua gracilis Herbaceous Vegetation	1
Pseudoroegneria spicata - Koeleria macrantha Herbaceous Vegetation	1
Pseudoroegneria spicata - Poa secunda Herbaceous Vegetation	1
(Pseudotsuga menziesii/Cornus canadensis)	1
Pseudotsuga menziesii/Festuca scabrella Woodland	1
Pseudotsuga menziesii/Juniperus scopulorum Woodland	1
Pseudotsuga menziesii/Pseudoroegneria spicata Woodland	1
Pseudotsuga menziesii/Spiraea betulifolia Forest	1
(Pseudotsuga menziesii/Symphoricarpos oreophilus)	1
Pseudotsuga menziesii/Viola canadensis Forest	1
(Quercus macrocarpa Floodplain Forest)	1
(Quercus macrocarpa/Andropogon gerardii - Schizachyrium scoparium)	1
(Quercus macrocarpa/Corylus cornuta)	1
(Quercus macrocarpa/Pascopyrum smithii)	1
Rhus trilobata/Calamovilfa longifolia Shrub Herbaceous Vegetation	1
Rhus trilobata/Carex filifolia Shrub Herbaceous Vegetation	1
(Rhus trilobata/Stipa comata Shrub Herbaceous Vegetation)	1
Rosa woodsii Shrubland	1
Salix bebbiana Shrubland	1
(Salix boothii/Calamagrostis canadensis Shrubland)	1
Salix geyeriana/Deschampsia cespitosa Shrubland	1
Salix geyeriana/Calamagrostis canadensis Shrubland	1
(Salix lutea)	1
Sarcobatus vermiculatus/Distichlis spicata - (Puccinellia nuttalliana) Saline Shrub Herbaceous Vegetation	1
Sarcobatus vermiculatus/Sporobolus airoides Sparse Vegetation	1
(Scirpus validus)	1
Sporobolus airoides Herbaceous Vegetation	1
Stipa curtisetata - Elymus lanceolatus Herbaceous Vegetation	1
(Sueda calceoliformis - Salicornia rubra)	1
(Yuca glauca/Carex filifolia)	1