

FY97-XXVII-74
“RECLAIMED GRASSLAND MANAGEMENT
FOR INCREASED PLANT DIVERSITY”

CONTRACTOR: Animal and Range Sciences Department of the North Dakota Agricultural Experiment Station/North Dakota State University

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PARTICIPANTS

<u>Sponsor</u>	<u>Cost Share</u>
North Dakota State University	\$63,240
The Coteau Properties Company	\$8,382
The Falkirk Mining Company	\$8,382
BNI Coal, Ltd	\$8,382
Glenharold Mine	\$8,382
Bellaire Corporation	\$1,244
Knife River Corporation	\$4,500
ND Industrial Commission	<u>\$46,410</u>
Total Project Cost	\$156,060

Project Schedule – 3 Years

Contract Date – 5/21/97
 Start Date – 5/21/97
 Completion Date – 6/1/00

Project Deliverables

Annual Report - 6/1/98 ✓
 Annual Report - 6/1/99 ✓
 Final Report - 6/1/00 ✓

OBJECTIVE / STATEMENT OF WORK

The objective of this project is to evaluate and prescribe livestock grazing and haying strategies to improve plant species diversity and seasonal balance of reclaimed native grasslands. The North Dakota Administrative Code (NDAC 69-05.2-22-07(4)(a)) states that success of revegetative native grassland and tame pastureland will be determined based on productivity, ground cover, diversity, seasonality and permanence. Of these, diversity and seasonality are the most difficult to achieve. Prior reports have noted the need for post-establishment practices to improve diversity and seasonality. A goal of this project is to recommend grazing management and haying strategies to improve diversity and seasonality while maintaining productivity and ground cover.

STATUS

Grazing and haying practices were evaluated on three grassland sites in western North Dakota on land reclaimed after lignite mining. Site one is located on The Falkirk Mine in the west-central portion of the Missouri Coteau Physiographic Region. The grazing study was conducted on 42 acres in Section 36. The grassland was reclaimed in 1989, 1991 and 1992. The haying study was initiated on 32 acres of reclaimed grassland in Section 34. On this site the grazing treatment did not improve plant species diversity or seasonal balance of species after two years of treatment. The haying practice appeared to increase species diversity and improve seasonal balance; however, because some samples were collected outside the haying area it is not possible to reach a conclusion.

Site two is located on The Coteau Mine with the reclaimed grassland grazing study in Section 12 and reference studies in Sections 4 and 13, respectively. An aggressive grazing and haying practice was maintained on the reclaimed site. Plant species diversity and seasonal balance of species were similar in 1999 on the reclaimed grassland and the two references areas.

Site three is located on the Glenharold Mine in the Missouri River breaks east of Washburn, North Dakota that lies in the Missouri Plateau Physiographic Region. The grazing study was conducted on reclaimed native grassland in Section 9. The area was seeded 2 to 4 years prior to spring grazing and aggressively managed following seeding, mowing or haying each year. At the location the reference site and reclaimed site had similar diversity and seasonal balance.

As a result of this 3-year study it appears that aggressive grazing and haying practices can contribute to improved species diversity and seasonal balance on reclaimed grassland. However, an initial 3-year study is too short a timeframe to reach a confident conclusion and the study should be continued for an additional 3 years.