

**FY94-XV-50**  
**THE SUCCESS OF CURRENT SOIL DEPTH REQUIREMENTS**  
**ON MINELAND IN NORTH DAKOTA: AN ASSESSMENT**

**CONTRACTOR:** North Dakota State University  
Land Reclamation Research Center

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**PARTICIPANTS**

<u>Sponsor</u>	<u>Cost Share</u>
The Coteau Properties Company	\$6,792
The Falkirk Mining Company	6,792
BNI Coal, Ltd.	6,792
Knife River Corporation	6,792
Basin Cooperative Services	6,792
ND Industrial Commission	<u>33,960</u>
Total	\$67,920

**Project Schedule - 2 Years**

Contract Date - 1/14/94  
Start Date - 1/14/94  
Completion Date - 4/18/96

**Project Deliverables**

Status Report - 5/31/94 ✓  
Status Report - 12/31/94 ✓  
Status Report - 8/31/95 ✓  
Final Report - 4/18/96 ✓

**OBJECTIVE / STATEMENT OF WORK**

In 1986 the Public Service Commission adopted regulations that reduced the depth of soil required for reclamation of cropland. A sunset clause on the regulations requires re-evaluation after ten years. The purpose of this study is to compare yields from land reclaimed under current regulations, to yields from undisturbed sites, and to yields from sites reclaimed under previous regulations. Sites will be selected from four central North Dakota mines. Fields will be selected at the sites to represent different spoil characteristics and different soil depths. Wheat yields will be determined and compared based on soil depth and soil chemical and physical properties. It is estimated that continuation of the existing regulations will save the industry approximately one million dollars per year.

## **STATUS**

Sites have been selected at the Falkirk, Coteau Properties, Glenharold, BNI and Knife River Beulah mines. Sites were selected from areas undisturbed by mining, areas reclaimed under reclamation laws prior to 1979, areas reclaimed under the old regulations prior to 1987 and areas reclaimed under the new regulations from 1987 to present. As many different depths of soil replacement as possible were selected. Sites in fallow and non-wheat crops were not selected, nor were sites in their first year of production. Wheat was harvested from each of the sites, samples threshed and cleaned, and yields determined.

## **CONCLUSIONS**

- In 1994 and 1995, there were no differences in average yield between sites reclaimed under the current regulations and land reclaimed under regulations that required up to 60 inches of soil.
- In 1994 average yields on undisturbed land (39 bu/ac) were higher than on reclaimed land (34 bu/ac), while in 1995 average yields on undisturbed and reclaimed land were equal.
- The difference between yields on undisturbed and reclaimed lands seemed to be due to poorer management practices on the reclaimed land.
- When yields from each regulation are subdivided into soil depths, no pattern related to soil depth occurs. This indicates that the current requirements for soil depth are sufficient.
- A reasonable interpretation of the data is there is no relationship between yield and soil depth for lands reclaimed under the current and 60-inch regulation.

## **RECOMMENDATIONS**

- Based on this data we can support the recommendation that current regulations for replacement of soil depth be extended and be made permanent.
- Recommend a one-year study of management practice variability on undisturbed and reclaimed lands.