

FY97-XXIV-68
REDUCING THE MANAGEMENT VARIABLE IN ASSESSING RECLAMATION SUCCESS

CONTRACTOR: North Dakota State University/Land Reclamation Research Center

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PARTICIPANTS

<u>Sponsor</u>	<u>Cost Share</u>
The Falkirk Mining Company	\$3,223.60
BNI Coal, Ltd.	3,223.60
The Coteau Properties Company	3,223.60
Glenharold Mine	3,223.60
Knife River Corporation	3,223.60
ND Industrial Commission	<u>\$16,118.00</u>
Total Project Cost	\$32,236.00

Project Schedule – 6 Months

Contract Date – 8/20/96
 Start Date – 8/20/96
 Completion Date – 2/28/97

Project Deliverables

Status Report - 11/30/96 ✓
 Final Report - 2/28/97 ✓

OBJECTIVE / STATEMENT OF WORK

The purpose of this project is to compare yields and management practices between undisturbed and reclaimed land. Previous studies (see Project FY94-XV-50) indicated a large variability for yields on undisturbed and reclaimed land. It was recommended that a one-year study be done evaluating the effect of the different land management practices on the undisturbed and reclaimed land yields. An objective of this study is to reduce the land management practices variable for comparing yields on undisturbed and reclaimed land.

STATUS

Productivity (wheat yield), reclaimed soil depth (current regulations, post-1987, versus old regulations, pre-1987) and management practices data were collected in 181 sites. Management practices represented six farmers and four separate mines. Regression equations were developed for each grower-management system and each set of regulations. Wheat yield was compared by the regression analysis with the soil depth at each site. The study reached the following conclusions:

- There is no difference in average yield between land reclaimed under the current post-1987 regulations and under the old pre-1987 regulations.

- When yields from each regulation were divided by soil depth some significant differences occurred, but the differences could not be related to show a pattern, consistency, or grower-management system.
- Separating the data into management units reduced the variability by 50% as measured by the standard deviation.
- Regression of yields versus soil depth produced poor relationships. There is good evidence that there is no relationship between wheat yield and soil depth for the current, post-1987 and old, pre-1987.

Mining companies and regulators can proceed with a great deal of confidence that land reclaimed under the current regulation will produce yields equal to those of land reclaimed under the old regulations. ***It is therefore recommended that the current soil depth requirements be continued and made permanent.***