

WOODLAND RECLAMATION IN NORTH DAKOTA: A 20-YEAR PERSPECTIVE ¹

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Abstract. Surface mining through native woodlands in the Missouri Breaks area of North Dakota was an environmentally sensitive issue both before and after passage of the Surface Mining Reclamation and Control Act in 1977. Wildlife agencies and environmental groups were skeptical that reclamation of these unique habitats would be successful. Use of the traditional shelterbelt technology had failed in the late 70's and resolution of this issue was paramount to future mining operations. Consequently, a concerted effort was made to demonstrate success using non-conventional establishment and management techniques. Following an in depth ecological study of why native woodlands occur where they do, a plan was developed in the early 80's where woodlands would be re-established on slopes and aspects similar to natural settings. To accomplish this, surface grading plans were modified and plant community response to several establishment and management techniques was observed from 1978 to the present time. The reclamation plan included the establishment of high-density woodland plantings of mixed native species on landscapes specifically constructed to enhance plant available water and consequently enhance woody species survival and growth. Woodland Establishment and management techniques are discussed. Additionally, photos showing changes in vegetative structure over time are provided along with stem density and species diversity data. These data were collected on initial demonstration sites as well as numerous woodlands established on various reconstructed soils and soil depths over a period of 20 years. Over this time frame, initial reclamation success varied relative to periods of highly variable weather patterns typical of the Northern Great Plains. Reclaimed plant community stem density and species diversity were found to be similar to native tall shrub communities. Other factors affecting success including plant community changes due to succession, herbaceous competition, disease and the livestock grazing are discussed.

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