

Experiments in Geomorphic Reclamation on AML Sites in New Mexico

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Abstract: This Power Point presentation focuses on three AML projects in two of New Mexico's life zones, the Carthage Gob Reclamation Project near Socorro in the Lower Sonoran life zone and the Yankee-Vukonich and Sugarite Canyon Gob Reclamation Projects near Raton in the Transition life zone.

At the Carthage project, geomorphic design principles, called "landform grading" as pioneered by Horst Schor of California in the 1980s, were the inspiration for the design of this project. Mimicry of natural hill slope shapes and forms was used at over a dozen regraded gob sites covering an aggregate 20 acres. Despite slopes up to 3:1, sparse but occasionally torrential rainstorms, lack of success in establishing vegetation, and only a foot of cover soils, no significant erosion problems have been seen in the seven years since completion.

At the Yankee-Vukonich project, a deeply incised stream system partly caused by the dumping of coal mine wastes and partly by the mine access road up the valley floor was restored using the Rosgen stream classification system. Nineteen full meanders were constructed along a thousand feet of valley bottom adjacent to two simultaneously reclaimed gob piles, leading to a stable stream system draining 60 acres of largely forested, steep mountain terrain.

At the Sugarite Canyon Gob Reclamation projects, the coal gob piles had to be reclaimed in place to satisfy requirements of the SHPO to preserve the piles as an integral part of the historic mining landscape. Through landslides and erosion, nature has shaped the five gob piles, covering a total of 20 acres, since mining began over a hundred years ago and in the sixty-five years since mining ceased. The resulting landforms, although not without erosion and stability problems, some severe, provided a diversity of hill shapes and slopes difficult to recreate with construction machinery and a drainage density much higher than the surrounding undisturbed lands. Reclamation focused on stabilizing slopes through innovative erosion and sediment control measures and vegetating the slopes through incorporation of soil amendments and planting of native seeds and seedlings.