

REVEGETATION SUCCESS STANDARDS— *Real Progress or Moving Target?*¹

Thomas A. Colbert²

Abstract. Technical standards for determining revegetation success are gaining in acceptance. The use of technical standards has advantages over reference areas—and few of the disadvantages. Although the evolution of revegetation success standards has presented a moving target for mining companies involved in the permitting process, real progress has been made in the development of revegetation success standards which reduce operators' risks, and which more meaningfully define a reclaimed landscape in terms of the performance standards mandated by law.

The permanent regulatory program under SM CRA is nearly ten years old. A unique feature of this program is quantitative revegetation success standards for bond release. Although it has not always been the case, coal mine operators and regulators now seem largely to understand how to deal with revegetation success standards, at least insofar as permitting requirements are concerned. (Only time will tell if lands disturbed by coal mining in the western United States will, in fact, be reclaimable under current standards.) But with this understanding have come new questions about the deeper meanings of "diverse, permanent and effective," and about parameters which may or may not realistically define such attributes in a reclaimed landscape.

As it was written, the law (SM CRA) was naive. Inherent in Congress' thinking was an assumption that if a coal mine had not disturbed a piece of land, it was as though it were pristine wilderness. A logical corollary, therefore, has been that pre-mining vegetation characteristics define the most desirable post-mining landscape. This "put it back the way it was" mind-set is manifest in the rules promulgated under the law, and the reason everybody was so hung up on reference areas in the early years of the permanent regulatory program.

Problems arose. What good is a reference area in sagebrush or pinyon-juniper for determining revegetation success on lands not to be reclaimed to sagebrush or pinyon-juniper? What good is a reference area dominated by cheatgrass? Are woody plant density standards based on reference areas in the tens of thousands of stems per acre realistic or desirable? Is a diversity standard which does not consider species

composition meaningful? How does one accommodate consideration of range condition, management, or land use in a reference area approach? Much has been written on the problems of reference areas (Redente et al. 1983 and Colbert and Trenholme 1986), and I will not take the time to go over the same ground again in this brief article.

And so technical standards have become more in vogue. Although some mining companies embraced historical records as an alternative to reference areas, the idea never really achieved widespread acceptance. In part what made technical standards so slow to catch on was reluctance on the part of regulators to let go of the idea that "publications" or "literature" upon which standards must be based had to be site specific and essentially as rigorously quantitative as vegetation baseline information. In other words, BLM production information from an adjacent area could not be used, even if it was shown to be from the same vegetation types and soils, because it was not site specific and because statistical sample adequacy had not been demonstrated. SCS information, such as range site descriptions and Form 5s, was considered even less appropriate by many regulators.

Using technical standards can minimize problems inherent in a reference area approach, although technical standards bring a few new problems of their own. In the first place, they are a matter for negotiation, and as such demand an assertion of professional judgment and expertise by operator and regulator alike. Fortunately regulators have become much more comfortable with this than in the past. Other problems with technical standards include lack of flexibility in accounting for vagaries in weather from year to year, and a paucity of appropriate published vegetation cover data in many areas (and an attendant lack of documentation of sampling methods in many instances where cover data are available). An odd quirk exists with some state regulations that requires for bond release that only 90 percent of a particular standard be achieved. So a "standard" isn't really a standard, 90 percent of the "standard" is the standard.

¹Presented as part of a panel discussion at the Fifth Biennial Billings Symposium on Mining and Reclamation in the West and the National Meeting of the American Society for Surface Mining and Reclamation. March 16–20, 1987. Billings, Mont.

²Vice President, Intermountain Soils, Inc. of Denver, CO.

A worthwhile side effect of technical standards has been a trend toward the development of revegetation success criteria which depart from the classical parameters of cover, production, density and diversity. Reference areas are not as amenable to such descriptive flexibility. These departures from the classical success criteria are mainly attempts, as I alluded to earlier in this article, to define more realistically the broad attributes of "diverse, permanent and effective" in a reclaimed landscape. Examples of this trend would be success criteria which mandate some type of landscape diversity, or woody plant density criteria which specify minimum densities for particular species or life forms—as such, such criteria become also a type of diversity standard. Production standards expressed in terms of AUMs require an assessment of usable forage, not just total production, and are more in step with management constraints and land use considerations. Total production as a success criterion tends to be blind to these. Researchers such as Eugene Doll in North Dakota, Edith Allen in Utah and others have considered still other ecological and edaphic attributes which may be meaningful indicators of reclamation success. Among these are soil bulk density, below ground production, soil microbial activity, water availability, and nutrient cycling. To my knowledge there has been no push to adopt such new parameters for routine use as revegetation success criteria. I would expect, however, that in time the regulatory performance standard requiring (perhaps in not so many words) a re-establishment of soil *productivity* will receive considerable scrutiny, and the use of new parameters may eventually be proposed as revegetation success criteria in efforts to define in some meaningful way the on-the-ground fulfillment of this general performance standard.

The increased willingness of operators and regulators to accept negotiated technical standards for revegetation success is a great opportunity to advance the reclamation state of the art in all its aspects. For operators, costs and uncertainty can be reduced. For regulators, more meaningful and enforceable parameters can be defined for achieving required performance standards and for better

fulfilling the intent of the law. Mining companies permitting new coal projects, and companies in the throes of permit renewal may want to revisit the old ideas about revegetation success, and consider replacing their reference areas with technical standards. There may be those in the industry who would complain that this is just another example of the "moving target" syndrome. I would submit that this is rather a problem of perspective—whether a glass is half full or half empty. Although this target may be moving, it is moving right back to where it should have been in the first place. And in this complicated world of rules and regulations, that's progress!

Literature Cited

- Colbert, T. A. and R. Trenholme. 1986. Revegetation success standards: regulatory trends for western coal mining. Itinerant Reclamation Notes No. 1. September.
- Redente, E. F., W. E. Sowards, D. G. Steward, and T. L. Ruiter (eds.). 1983. Symposium on western coal mining regulatory issues: land use, revegetation, and management. Colorado State University, Range Science Department, Science Series No. 35. August.