

THE NEED FOR INNOVATION IN
WESTERN LAND RECLAMATION¹

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Abstract. This year, the tenth anniversary of the Surface Mining Control and Reclamation Act (SMCRA), is an appropriate time to examine specific examples of the need to encourage innovation in western reclamation. Sediment control, irrigation, and highwall retention are controversial issues that challenge regulators to encourage innovation and coal operators to pursue research.

This year marks the tenth anniversary of the Surface Mining Control and Reclamation Act (SMCRA). As the U.S. coal industry scrambles to cope with serious economic difficulties, it is appropriate to examine some other difficulties that have their origin in certain provisions of that ten year old law, and that bear directly on the economic viability of surface coal mining in the west. This paper focuses briefly on three technical issues in the reclamation of surface coal mines in arid regions, and suggests that innovation can resolve these issues.

The coal industry operates within a narrow legal context, defined in 1977. In enacting SMCRA, Congress listed among the purposes of the Act "...to...strike a balance between protection of the environment, agricultural productivity and the Nation's need for coal as an essential source of energy." I maintain that such a balance has never been struck, particularly with regard to the reclamation of mines in the west. One reason is that when SMCRA was enacted its supporters were aware of uncertainties about the potential for successful reclamation of western surface mines. Over the intervening years, as a recent Congressional study report (OTA, 1986) points out, "...the risks these uncertainties may pose to the long term success of western reclamation have been reduced significantly." Unfortunately, SMCRA's enforcement agency, the Office of Surface Mining (OSM) has not yet recognized this fact, and the western coal industry is paying the price.

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The news that progress has been made in resolving some early questions about reclamation success, and that new ideas about reclamation hold considerable promise for even better results, will not come as a surprise to many of the good folks in OSM. Congress listed as another purpose of SMCRA, "...to...stimulate, sponsor, provide for and/or supplement present programs for the conduct of research..." However, contrary to the intent of Congress, OSM has each year reduced budget requests for funding research. Their 1986 request was for less than one million dollars, of which the largest single item was for "...staff and administrative support..." (OTA, 1986).

One possible explanation for the low priority OSM assigns to research is to be found in SMCRA, where Congress determined that, "...surface mining and reclamation technology are now developed so that effective and reasonable regulation of surface coal mining operations...in accordance with the requirements of this Act is...appropriate and necessary..." One conclusion to be drawn from this is that the massive regulatory edifice built by those who would strictly interpret SMCRA and its hundreds of pages of regulations, is built upon a foundation of technology from the 1970's. The result, in some western mines, is overly costly requirements that offer less, not more, environmental protection. Following are three examples of such requirements, and in each case it is clear that innovative technology is available to accomplish equivalent or superior environmental protection at less cost.

Sediment control in the west is not worth a dam. I am indebted to two colleagues, Krishnamurthi and Humphreys, for coining that phrase in a paper they wrote in 1980. Their point, briefly stated, is that if you remove sediment from water by impounding it behind a dam, then release that clean water into a natural channel that characteristically accomodates water heavily laden with sediment, as is the case with most ephemeral streams in the west, the immediate result can

be a dramatic increase in erosion along the channel. This is fact, not theory, well documented in the literature of geomorphology. In spite of that, and in the face of OSM-funded studies that question the utility of sediment ponds, OSM has to date required the construction of dozens of sediment ponds at mines in the west. However, in a remarkable policy shift in response to a Federal court order, OSM Deputy Director James Workman stated in a memorandum last September that the regulatory authority may now determine sediment control requirements on a case-by-case basis. Furthermore, in another significant break with longstanding OSM policy, the standard for evaluating the best technology for sediment control is now, "...whether or not additional contributions of suspended solids to streamflow or runoff outside the permit area will be prevented rather than whether or not point source effluent limitations will be complied with." (Workman, 1986). Now the challenge for OSM and the state regulatory authorities is to use this development as an opportunity to encourage innovation by mine operators, and to allow regulatory programs the almost unheard-of luxury of recognizing ecologic reality in the West. Of course, this whole issue is complicated by its linkage to the Clean Water Act, and by the unfortunate early OSM policy decision to avoid working out an accommodation on sediment control with the Environmental Protection Agency and the coal industry. There are, however, recent signs of encouraging movement on this issue.

Irrigation may be all wet. Embodied in SMCRA and the OSM regulations is the concept that reclamation and revegetation should quickly establish a diverse and effective plant community. That emphasis on speed, while clearly appropriate in areas of moderate to high rainfall, seems to be of questionable utility in the arid west. While reclamation results to date appear to show that there is no absolute need to wait for natural plant succession to take its course, some research done on this subject indicates that diversity of plant species may actually be reduced by irrigation under some circumstances. In small test areas at the Navajo Mine in northwest New Mexico, early results from revegetation establishment without irrigation are encouraging, and we plan to increase the acreage in these tests.

However, if the time required to achieve bond release is extended significantly by revegetation establishment without irrigation to get that quick plant cover, then the costs of holding that acreage may increase. The best response to this concern is that there are indications now that, in the long term, revegetation may be more successful and more stable without irrigation for establishment. Innovation, in this case, may involve the need to let nature take its course, with only minimal inputs from technology.

Highwalls can be for the birds. Among the most memorable features of western topography

are the faces of the steep cliffs. These areas are widely used as nesting and roosting sites by important raptors such as eagles, falcons, and hawks. This fact was recognized by the State of New Mexico in its permanent regulatory program under SMCRA, which provides for the retention of partial highwall sections if the operator can demonstrate the need for wildlife habitat and the ability to make the area safe.

Unfortunately, a judge subsequently ruled that SMCRA does not provide for such flexibility. Although some mines were permitted to leave limited highwall sections before the latest ruling, this innovative practice seems unlikely to continue without an amendment to SMCRA. This is unfortunate because not only is the re-establishment of wildlife habitat an important and worthwhile goal of reclamation, but also because the cost savings to the operator from not backfilling the entire highwall would be significant. The challenge is to develop ways to demonstrate that highwalls can be left standing for useful purposes and not pose a safety hazard. Such evidence will be essential to support an amendment to SMCRA.

It is time to move the track we are on. At times it seems that OSM is like a big coal-fired locomotive, pulling its heavy train of coal operators who are confined inside cramped boxcars built of regulations. The train is steaming along the track the SMCRA laid for it, and some have called for amendments to SMCRA as the only way to get us all headed in a different, more productive, direction.

As studies of the regulation of surface coal mining (OTA, 1986, and NRC, 1981) have repeatedly pointed out, strict design standards in the law and regulations "...may unnecessarily increase the costs of reclamation and may even undermine efforts to improve the quality and capability of the land." (OTA, 1986). Therefore, there are substantial arguments in favor of changing SMCRA to accommodate what we have learned since 1977. Specifically, amendments are called for to allow retention of highwalls in some cases, and to place greater emphasis on research as a specific and important part of OSM's mandate. There is no reason that the track laid down by SMCRA cannot be made to take some innovative turns.

In addition to changes in SMCRA, modifications of OSM regulations are clearly in order to encourage, not reluctantly allow, experimental practices. Most informed observers, regardless of their previously held positions on reclamation, come away from tours of western mines remarking about the excessively restrictive requirements that regulations impose on operators, without any obvious environmental benefits. Those regulatory boxcars that now confine the industry need to be rebuilt to accommodate the progressive coal operators who want to innovate to find new ways to meet the challenges they face. True experimental practices with the proper emphasis

placed upon the word "experimental" must be encouraged by OSM, and the inherent risks must be accepted by all concerned as a reasonable price to pay for innovation.

In conclusion, there is an important message for the coal industry at the end of the OTA report upon which I have drawn so heavily for this paper. That message, simply stated, is that industry cannot afford to wait for OSM or other government agencies to stimulate innovation. If we really believe that we can develop innovative solutions to the problems of environmental protection, then industry must seize the initiative. The coal industry must develop and fund the necessary research. Whether it be as individual companies, through existing trade and professional organizations, or through a new consortium as suggested by OTA, only by taking the initiative now can we be assured that the research agenda truly addresses our needs for innovative solutions to the problems we face.

LITERATURE CITED

- Krishnamurthi, N., and Humphreys, D. L., 1980, "Sediment Control: Is it Worth a Dam?," in Proceedings of the Symposium on Surface Mine Hydrology and Sedimentology, Lexington, KY, pp. 17-19.
- National Research Council, Committee on Soil as a Resource in Relation to Surface Mining for Coal, 1981, Surface Mining: Soil Coal, and Society, National Academy Press, Washington, D.C.
- U.S. Congress, Office of Technology Assessment, Western Surface Mine Permitting and Reclamation, OTA-E-279, U.S. Government Printing Office, Washington, D.C., 1986.
- U.S. Congress, "Surface Mining Control and Reclamation Act of 1977," Public Law 95-87 30 USC 1201 August 3, 1977.
- U.S. Department of the Interior, Office of Surface Mining. September 17, 1986. Memorandum to Field Office Directors from James Workman, Deputy Director: "Siltation Structures." Washington, D.C.

