

of the problem such as water and air pollution. Consideration should also be given to allowing credit for improvement work beyond simple restoration.

The Board may expect industry to accept an important share of the responsibility for conservation measures required as a direct and local consequence of operations, and beyond this to undertake research on methods that will lower the cost of such measures. But the Government itself should also undertake research on coproduct recovery, waste disposal, the conversion of spent shale to soil, and similar problems, in an effort to swing the economic balance in favor of sound conservation practices. Even more important, government must undertake, or cause to be undertaken, the research necessary to establish Federal and State standards to be met and maintained by the operator, particularly in the area of air and water pollution and in treatment of the landscape. Close-down procedures and use of mined-out lands should be considered so as to assure an orderly disengagement from oil shale operations when that time comes.

VI. DISPOSITION OF LEASE REVENUES

Under the provisions of the existing Mineral Leasing Act, 37.5 percent of the revenues from oil shale leases are allocated to the State, 52.5 percent to the Reclamation Fund, and 10 percent to General Receipts (in Alaska 90 percent goes to the State). Revenues from the off-shore oil in the Gulf of Mexico go into the Federal treasury. The question of how revenues from oil shale leases should be allocated has not been considered in detail; it raises many basic issues of public finance that go beyond the purview of the Board.

It may be useful in future consideration of the problem, however, to call attention to the fact that oil shale is a contributor to regional income and employment as well as a national resource, and that the benefits of its development will accrue to both the oil shale States and the Nation. Similarly, the attending costs stemming from a wide variety of direct and peripheral effects of oil shale development will have to be borne in some measure by the State and Federal government. Whether or not these expenses are provided for wholly or in part from lease revenues, they must be accepted as part of the public responsibility in oil shale development.

In consideration of these facts, there is much to be said for a departure from traditional allocation of revenues in the direction of a simple split between the States involved and the Federal government, with the expectation that each would use these revenues, or their equivalent, primarily to prevent or abate any public damages resulting from the oil shale development, to promote general resource conservation, and perhaps to further public education at the discretion of the legislative bodies. The Board recommends that the Department review the allocation of lease revenues and related matters along lines suggested here.

VII. FEDERALLY SPONSORED RESEARCH

While in general the Board would expect industry to conduct the research leading to and involved in commercial operation, there are problem areas in which the Federal government must see that the necessary research is undertaken either through contracts with private industry, universities, or research institutes, or by conducting the studies itself. One of these areas involves the establishment of the conservation goals and standards discussed above. The Government should also sponsor research on those scientific and technologic problems that are of such long-range importance or are of so broad a scope that they are beyond the reach of private industry.⁴ As a landlord leasing its holdings, the Federal government must also acquire better knowledge of the origin, distribution, thickness, and quality of the oil shale and of other resources that occur in the shale areas, and to bring the oil shale knowledge of Wyoming and Utah deposits up to that of present knowledge of Colorado deposits.

In addition to scientific and technical studies, the Federal government should do economic research, or induce others to do it, on cost trends, future markets, general labor and capital requirements, locational problems, transport, and the like. Longer range projections of demand for shale oil, all oil, and competing fuels, as well as projections of alternative supply sources and probable costs could be prepared by the government as a kind of framework of trends and

⁴ For Mr. Perkins' dissent on this subject see his statement in the final section of the report.