

# MINE WATER AQUACULTURE: LINKING COAL MINING, FISH FARMING, WATER CONSERVATION AND RECREATION<sup>1</sup>

Gerard D'Souza and Daniel Miller<sup>2</sup>

**Abstract:** West Virginia has many active and abandoned mine sites that have plentiful water supplies potentially suitable for raising trout, arctic char or other aquaculture species. While the technical feasibility of raising fish in mine water for food or recreational purposes has been demonstrated and shown to be within acceptable food safety limits, the economic and financial feasibility have not been fully explored, our objective in this analysis.

Additional costs incurred in aquaculture production from mine water can be less than with a conventional aquaculture operation. One reason is because government regulations require mine water to be treated before it is discharged, thus providing an aquaculture production facility access to a relatively low-cost resource and simultaneously contributing to conservation of this resource. We quantify the costs and benefits of mine water aquaculture using standard financial feasibility techniques and data from primary and secondary sources. We also illustrate the potential economic development impacts (i.e., economic multipliers) of growth in the aquaculture industry on statewide output, income, and employment. In general, we find that, under the conditions investigated, mine water aquaculture is financially feasible from the fish farmer's standpoint (feasibility from the mining company's viewpoint is also important, but has not been explored) and, if widely adopted, will result in sizable economic development benefits. The results have implications for the aquaculture and coal industries in Appalachia, and should also be useful to policy makers in other parts of the country where coal mining can be linked to fish farming, water conservation, and recreation.

---

<sup>1</sup>Paper was presented at the 2004 National Meeting of the American Society of Mining and Reclamation and the 25<sup>th</sup> West Virginia Surface Mine Drainage Task Force, April 18-24, 2004. Published by ASMR, 3134 Montavesta Rd., Lexington, KY 40502.

<sup>2</sup>Gerard D'Souza is Professor of Agricultural and Resource Economics and Daniel Miller is Senior Project Coordinator - Aquaculture, at West Virginia University, Morgantown, WV 26506.