SUSTAINABLE DEVELOPMENT IN APPALACHIA – A NEW WAY OF LOOKING AT MOUNTAINTOP MINING[1]

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Abstract. Mountaintop Mining in Appalachia has been challenged in recent years by continuous reinterpretation of environmental regulations for this long accepted mining practice. Effective planning, permitting and reclamation results in a "Higher and Better Land Use". Mountaintop mining creates opportunities for development and can be called a value-added process. This analysis of mountaintop mining and Post Mining Land Uses attempts to set out a conceptual framework for establishing increased land values. Mountaintop mining epitomizes the concept of Sustainable Development within the borders of the United States in a region that truly needs new development opportunities.

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Introduction

Ever notice that when a newspaper or television journalist reports on mining and specifically, on mountaintop mining, the photos and video focus on where the machines are working and the land is disturbed (See Fig. 1)? They rarely pan the camera back 400 to 500 yards to show often found rolling green hills or newly planted trees with several species of animals present (See Fig. 2). Some in our community would have us all think that the short-term existence of land disturbance is the entire image of mountaintop mining. Nothing is further from the truth. Sustainable development, "development that meets the needs of the present without compromising the ability of future generations to meet their own needs," (*Breaking New Ground*, 2002) is a long-term view and looks at projects from the beginning, during operations, and post closure. Shortsightedness, as is shown often by the media techniques above, leads to wrong impressions, wasted resources, and missed innovative opportunities for greater sustainable enhancement.

Figure 1. Active MTM operation. ECSI File photos

Figure 2. Reclaimed MTM operation. ECSI file photos.

There has been considerable debate of late between environmentalists and mining operators concerning the current regulation and operation of mountaintop mining. Because most of the dialogue has been adversarial and mining's response is perceived to be primarily reactive instead of proactive, a rift in communication and value systems between the two sides has widened. In order to be more proactive and to combat shortsightedness that only adds to the disconnect between the community and the truth about mining, this paper will discuss the positive sustainable impacts of mountaintop mining and why mountaintop mining will not turn into a negative impact if done correctly.

Positive Aspects of Mountaintop Mining

Mining means jobs. Several generations in several families were miners with some working for the same company at the same mine for generations. Mining is inextricably intertwined with the lives of the people of Appalachia and in many places is the culture of the region.

Still, coal companies operating in the Appalachian region have for decades been vilified as robber barons taking the wealth of Appalachia and leaving nothing but a legacy of poverty and environmental damage. As Barbara Freese noted in her book, "Coal a Human History," the U.S. and Great Britain owed their rapid industrial growth and economic base to their respective coal industries that fueled these economies during that growth in the past (Freese, 2003). The U.S. still relies on coal for its economic base, of which the Appalachian coalfields are an important component.

In recent years the rise of large surface mines in Appalachia, particularly mountaintop mining operations, have been vilified by the environmental community as destructive, forcing people from their homes, destroying the land and water forever. This image has been conveyed to the public across the country, resulting in politicians, churches, religious organizations, and many others condemning and asking for an abolition of the practice of mountaintop mining. There is another side to this story.

Mountaintop mining has been conducted in the central Appalachian region for decades (See Fig. 3). The mining practice was even refined and encouraged by federal research efforts and regulatory agencies in the 1970's. At the time it was initially practiced, there was not much thought given to the post-mining land uses.

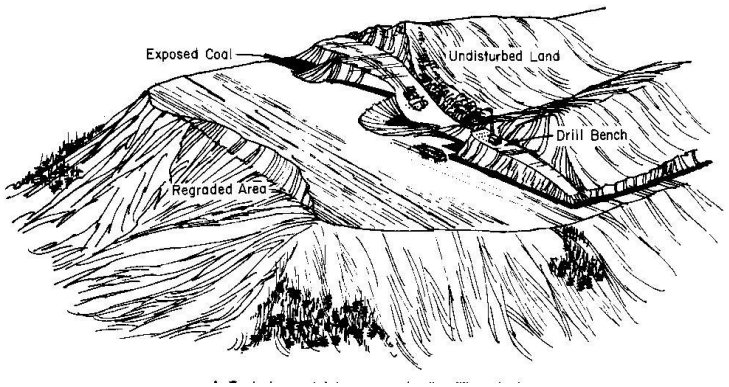

Figure 3. Mountaintop Mining (Skelly and Loy, 1975)

However, over time landowners, some of whom were mining companies, realized the mining method was creating a valuable resource for the central Appalachian region which could be developed, i.e., useable land, in a region that had a short supply of land.

Many have compared central Appalachia to other Appalachian regions that have thrived and pointed to the coal industry as the villain holding back development potential in the area. They point to areas and cities such as Asheville, North Carolina, or other major cities that are in the region. While similar, topography between regions in Appalachia also differs. While mountains are prevalent in Eastern Kentucky, West Virginia, and western Virginia, the valleys are so narrow that potential for development is limited as opposed to the valleys on which Asheville, North Carolina was built. There may be some blame to be shared by the coal industry and larger landowners, but there is enough blame to be spread around to all parties. Failed government social engineering programs from the 1960's have left an area with residents who are dependent upon government subsidies. Drug use has become prolific and a drug culture still exists.

Analyzing the root causes of these problems is beyond our capacity as engineers. However, it is clear to us that blaming the coal industry and large landowners is a smokescreen for other problems. Success stories in the Appalachian region are generally in areas where there is good infrastructure and roads that make the areas attractive for development. Only in recent years has the central Appalachian region opened up with new highways crisscrossing the region making the travel to the region as easy as any other part of the country. The derivative benefit of these new highways and the new opportunity of developable land have changed the potential economic climate. Reclaimed mountaintop areas also open up tourism possibilities in the region, with land that can now be developed into golf courses, mountaintop retreats, fish and wildlife areas, and now large vast acres that can be open for the outdoor enthusiasts; including ATV users, horseback riders, etc (See Fig. 4).

Figure 4. Twisted Gun Golf Course – Mingo County, WV
ECSI File Photos

Critics of mountaintop mining have also used the argument that only so much land can be developed and no mountaintop mining should be allowed unless there is designated use approved and financed up front. Of the majority of the mountaintop developments that have taken place in recent years, some are on areas where development was not contemplated. Development was an afterthought and added benefit. Now that the potential has been realized, other areas can be mountaintop mined and held in reserve for future uses with greater planning from the outset of the mining project.

For most of the central Appalachian region, pre-mining land use was unmanaged forest (Rusk and Gardner, 2004). The approved list of alternate post-mining land use includes residential, commercial, industrial, institutional, educational, recreational, fish and wildlife, agricultural, or even managed timberland (Rusk and Gardner, 2004). The nation has seen a rapid increase in demand for new housing in recent years, fed by fast population growth, new immigration and easier credit. Some rural Kentucky counties have seen small increases in population from retirees fleeing cities for a rural lifestyle or farmers from other states seeking cheaper land (Rusk and Gardner, 2004). The West Virginia Disaster Recovery Board concluded in 2002 after severe flooding and damage to communities in Southern WV that entire towns may need to be moved out of the flood plains to continue to be viable (Rusk and Gardner, 2004).

The Kentucky Coal Association recently did an informal survey of the Property Valuation Administrators in the eight largest coal-producing counties (Rusk and Gardner, 2004). The survey found: typical undeveloped mountain property is valued at $100-150 per acre, with the value growing to $250-300 per acre for undeveloped land with mineral rights; identified sales of reclaimed mountaintop mining sites in excess of $10,000 per acre; in Bell County, Kentucky a 500-acre tract recently sold for almost $2000 per acre; Floyd County, Kentucky reported lots on a mountaintop mining residential golf course development were selling for $40,000–$50,000, the most expensive in the county (See Fig. 5).

Figure 5. Stonecrest Golf Course. ECSI File Photos

As was stated previously, both the United States and Britain rely on coal for the basis of electrical power generation. Kentucky owes its record as having the lowest electrical power rates to the mining and use of coal in Kentucky. Lower rates mean that Kentuckians can spend the dollars saved on other needs to help diversify the economic base of Kentucky.

Kevin Houston, a longtime resident of southeastern Kentucky, can remember hunting trips with his father who said that before the mines came, game was scarce. Once the mines came and reclaimed their land, however, the amount of game became abundant such that it was rare to not be able to see a deer, turkey, or elk on any visit to the forest. Many reclaimed lands are managed in conjunction with state and federal fish and wildlife services to create wildlife habitat and conservation control areas. Re-introduction of elk and turkey on reclaimed land in the Appalachian region has been successful enough to allow controlled hunting (See Fig. 6). Both species had been previously harvested in the region down to dangerously low numbers with elk, in fact, being non-existent in the region prior to the re-introduction efforts.

Figure 6. Elk Found on Reclaimed Mountaintop Mined Land. ECSI File Photos

The abolishment of mountaintop mining as being advocated by many activists' groups, now with the support of many national environmental organizations, and even religious groups, would be a true waste of natural resources. Natural resources in the ground that provide energy and raw materials are also a natural resource of a lost future opportunity for the landowners, potential owners, and future economic stability for a region.

Recent research at the University of Kentucky has shown that altering the reclamation and minimizing compaction on mountaintop sites greatly enhances the potential for tree growth, making mountaintop sites areas for renewable resources. Another innovative use that has been developed is the placement of windmills on reclaimed mountaintop mine sites to produce wind energy as a renewable energy source. It is conceivable to place solar collectors at such sites as well when the economics of solar energy are proven.

Many specialists in government and industry have had a "golf course mentality" concerning reclamation. That is, the reclaimed surface of the land should be graded smoothly with little visible rock. This is a very difficult task and adds significant cost to reclamation. As a result of

the constant tracking back and forth of equipment, reclaimed mine spoils become more compacted. In theory this has impacted tree growth on these areas, resulting in small, slow-growing trees. Recent research has shown minimal compaction allows deeper root penetration and more rapid growth, vastly accelerating the growth of trees; leaving marketable timber in a much shorter time period(See Fig. 7). The resulting land surface gives the appearance of a rough rubble strewn surface, but this may be, in fact, a more natural environment.

Figure 7. Experimental Tree Growth. ECSI File Photos

Natural erosion processes formed the Appalachian mountains. As the flow of water across the land eroded the hollows and valleys over the eons, mountains resulted. In fact, in many areas the natural surface is rubble strewn with rock that have broken over time, as the water courses eroded the softer materials, often leading to cliffs in many areas. The Surface Mine Reclamation Control Act of 1977 (SMCRA) (30 U.S.C. § 1201) dictated reclamation to approximate original contour. Approximate original contour has very little or scientific and technical justification other than aesthetics. An argument could be made that leaving high walls in the mountains would result in a more stable environment, more conducive to tree growth and wildlife. While this aspect of law is unlikely to be changed over time, it does give one pause to think.

Still, much of the regulation born of SMCRA is designed to guarantee that all short and long-term environmental costs, benefits, and needs are addressed to the satisfaction of the regulatory agencies tasked to police such issues. Bonding requirements are based on the cost of reclamation to satisfy the regulations protecting the environment in the short and long-term. Before the permit is issued allowing mountaintop removal, all environmental needs must be satisfied.

Why Mountaintop Mining Will Not Turn Into A Negative Impact

In Kentucky, West Virginia, Tennessee, and Virginia, all original mining permits are required by regulations to be published in the newspaper of the greatest circulation in the county where the proposed project is located. The permit is available for review at a particular regulatory site by anyone with interest in the project. This allows for any and all affected communities of interest to comment and give input into the decision to allow the project to proceed as is, whether the project should be modified, or to input any factors not considered in the permit which are important to the particular commenting interest. Comments are collected by the regulatory agency for a set time and conveyed to the operator seeking the permit for

appropriate response. Once the operator responds, the regulatory agency reviews the response in terms of the comment to decide whether the permit should be issued and the project should be commenced, whether modifications are needed, or whether the permit should not be issued. This process serves as both a means of allowing engagement and as a means of dispute resolution as the operator is subject to a possible hearing on the comments and to regulatory recommendation and approval for the operator's response to the comment.

The myriad of permits required for a mining project and associated regulations are designed to assure that ample evidence is available to support the assessment of trade-offs necessary in the project. At present, the permitting process is designed such that the interests of the various communities of interest are addressed through the behavior of the regulatory agency and required compliance with regulations. Mining methods such as mountaintop mining and post-mining land uses are required parts of the permit and, thus, the use of these methods by operators is subject to landowner and public comment, as well as regulatory adjustment and approval. Reporting and verification of compliance come in the form of regulatory inspection, oversight, and policing of the operator as the project progresses.

In effect, all communities of interest are invited to become informed of the project through the public notice. If no comments are forthcoming, it is presumed that the interested communities have given informed and voluntary consent to the project. After mining, the land must be returned to approximate original contour unless an exemption is approved. Section 515 of SMCRA provides an exemption to allow for industrial, commercial, residential, or public use deemed to constitute an equal or better economic or public use (30 U.S.C. §1265 (e) (Section 515 (e) of SMCRA). This allows for mining companies to plan post mining land uses that could potentially fit the economic and social needs of the local community while all the plans for both the post mining land configuration and ongoing operations must be approved by the regulatory agencies. Regulations promulgated by state legislatures are designed to address most if not all of the issues important to the various communities of interest yet still allow productive use of the resources available for both the current and future generations.

Not only regulatory requirements but also market incentives drive mining companies to pay attention to proper reclamation and planning of mountaintop areas. Market incentives stem from the landowner's benefit of the greater value of the land. A market incentive on the part of the mining company is the potential decrease in reclamation cost by allowing the land to remain as gently rolling as opposed to hauling, placing, and stabilizing material on such a large scale.

The opportunities abound for voluntary programs when the land is allowed to be changed to provide benefit to various communities involved. Whether it be working with the state or federal fish and wildlife agencies to create new and better wildlife habitats and conservation areas or a recreational site for the benefit of the local community, no opportunity would be available without usable land.

Many representative post mining land uses are success stories that show that local communities in Appalachia have the capacity and resources to make good use of the usable land mountaintop mining provides. While not all mountain top sites are developed, most of the successful uses were not pre-planned (See Fig. 7 and Fig. 8).

Figure 7. Farming. ECSI File Photos.

Figure 8. Industry. ECSI File Photos.

Mike Whitt, Executive Director of the Mingo County Redevelopment Authority, is developing a Land Management Master Plan for Mingo County, West Virginia that he hopes will be modeled by neighboring counties. His work has involved meetings with all the agencies and communities of interest involved with future land use planning including environmentalists, local and state government, utilities, mining companies and land companies. His goal is to plan utilization of land that will be and has been mountain top mined in an effort to create more development while at the same time lower the cost associated with such development. For example, by working with the various parties involved, a road project that is projected to cost $400 million is now projected to cost $60 million by coordination with a mining company to do the earthwork associated with the road base meeting specifications of the transportation department. It would cost too much for the local and state government to do the same work without the development opportunities afforded by coordination and planning of post mining land uses of mountaintop mining areas.

Critics seem to worry that mountaintop mining will level the mountains of Appalachia and destroy the environment. They often take a hardened stance to say that any mining whatsoever should not be allowed. However, according to the Environmental Impact Statement of Mountaintop mining, in a 12 million acre study area including 59,000 miles of streams, only 6.8% of the acreage has been or could be affected by mountaintop mining (United States Environmental Protection Agency, 2003). Twelve hundred miles of headwater streams, or only about 2%, have been or will be directly impacted by mountaintop mining. Given the benefits touted above as a trade-off of, at best, 6.8% impact, it is obvious that the progressive stance held by the mining and local communities clearly presents a win-win-win situation for utilization of land changes produced by mountaintop mining.

Not all mountaintop mining projects are success stories. As with any industry, there are a few bad operators that give the rest a bad reputation. Unfortunately, anytime these bad operators do something that is detrimental to the environment or the community, the event becomes a media sensation. Eventually, the bad operators' bad behavior does catch up to them. Some are caught and fined or "banished" from mining through the Applicant Violator System. Some

companies that did not keep up with reclamation requirements have succumbed to bankruptcy because reclamation costs have built up to a point where financial management is impossible.

Conclusion

The benefits of innovative, higher, and better uses of the land allowed due to mountaintop mining provide for both the current and future generations in Appalachia. People benefit from the jobs and infrastructure brought to the region by mining as operations progress and by the development of mountaintop areas. Regulatory requirements and market incentives keep the mining companies motivated to ensure that reclamation and post closure plans become a reality. The land disturbance and detrimental effects of mining that cause some to cry for all mining to cease are temporary for most mining projects and do not produce the deleterious effect falsely asserted by those who would stop all mining. It is time that we realize that we can all work together to harmonize mining, the environment, and community needs (See Fig. 9).

Figure 9. Appalachia. ECSI File Photos.

Literature Cited

Freese, Barbara 2003. Coal A Human History. Perseus Publishing.

International Institute for Sustainable Development 2002. Breaking New Ground: The Report of the MMSD Project. Earthscan Publications Ltd.

International Institute for Sustainable Development, Task 2 Work Group, MMSD North America 2002. Seven Questions to Sustainability: How to Assess the Contribution of Mining and Minerals Activities. Unigraphics Manitoba Ltd.

Rusk, George A. and Gardner, J. Steven 2004. Mountaintop Mining, New Challenges and New Opportunities. Eastern Mineral Law Foundation (April, 2004).

United States Environmental Protection Agency 2003. Mountaintop Mining/Valley Fills in Appalachia Draft Programmatic Environmental Impact Statement. EPA Region 3, Philadelphia, PA.

30 U.S.C. § 1201.

30 U.S.C. § 1265 (e).