LONG TERM LAND USE PLANNING FOR DRASTICALLY DISTURBED LAND[1]

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Abstract: The success of planning for use of surface mined land after the cessation of coal mining in Kentucky has been mixed and varied. While a great deal of "developable" or relatively flat land has been created, little has actually been used for the purposes intended. In the early 1980s planning was begun for the 17,000 acre Star Fire mountain top removal mining site with the intention of utilizing it for an assortment of land uses from industrial, to residential, to wildlife refuge. By the early 1990s the wildlife portion of the master plan was achieved with the introduction of Canada geese and later an elk population. In the mid 1990s Cyprus Minerals sold Star Fire to Addington Resources, and planning and development appeared to have been abandoned. By 1998, with proposals to develop a 500-megawatt power plant designed to burn waste coal, the planning process was revived. Plans are now in progress to provide utilities and an entryway into the site through state and private cooperation. The prospects for the long-term development of a large-scale project are positive. The major issue here is that long term planning should be viewed as just that, long term. Not a lot will be achieved unless all of the considerable number of pieces are brought together at the correct moment. However, if the initial planning to construct land forms for future use had not been undertaken development would not have been possible.

Additional Key Words: economic development, surface mining.

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Introduction

The Office of Surface Mining Reclamation and Enforcement (OSM) asserts that the Surface Mining Control and Reclamation Act of 1977 (SMCRA) has been successful in returning land to its original use, or improving it for "new uses that benefit both landowners and communities." (United States Department of the Interior 1997) Their video, "A Page in Time," shows aerial views of reclaimed sites as the narrator states, "These lands are productive once more. In some cases these lands are better than they were before mining. " Many have argued that the technique of surface mining known as mountaintop removal, becoming widely used in mountainous Appalachia, provides communities with a valuable scarce resource -- flat land for development (Merkin and Nieman 1996). Others complain that current mountaintop removal operations constitute a blatant circumvention of the surface mining law, with serious environmental consequences (Mueller, 2001; Galuszka, 1997). Certainly the scale of surface mining has changed drastically in the twenty-five years since SMCRA was written. There are questions as to whether surface mining law and regulations are adequate to deal with the complex task of ensuring that postmining land uses are productive enough to justify the variances to Approximate Original Contour (AOC) which are granted. Conversely, there may be viable economic development opportunities lost because the regulations do not have provisions for the influence of market conditions on the timing of development projects.

History of the Surface Mining Law

Surface mining law has been a battleground of opposing interests. West Virginia passed the first law regulating coal mining in 1939. Everitt Dirksen proposed a federal mining law in 1940, and Ken Hechler of West Virginia proposed legislation in 1971 to ban surface mining entirely. Finally, in 1977, SMCRA was passed into law after years of debate pitting citizens, industry, environmentalists and business interests against each other to craft an essentially schizophrenic law whose purpose was to:

> assure that the coal supply essential to the Nation's energy requirements, and to its economic and social well-being is provided and strike a balance between protection of the environment and

agricultural productivity and the Nation's need for coal as an essential source of energy. (SMCRA §102 Statement of Purpose (f))

Richard Miller notes "The legislative struggle can be succinctly characterized as a series of small victories for proponents and opponents of federal surface coal mining regulation," and points out the strategic placement of the Office of Surface Mining within the Department of the Interior rather than with the Environmental Protection Agency (Miller 1993). The dual regulatory structure of the law also created problems. The federal program provides for state primacy, in which the state may put forth its own laws and regulations "in accordance with the requirements of [SMCRA]." (SMCRA §503 State Programs). OSM reviews and approves state programs, while ongoing federal oversight is meant to ensure that procedures and rules are properly carried out and to provide recourse for citizens who feel their complaints to the state are not being pursued. The federal law, pushed by a coalition of coalfield citizen groups who saw the futility in dealing with mining on a state-by-state basis (McElfish 1993), came about because the states were not doing a good job of regulating the coal industry. The law explicitly states that one purpose is to prevent states from competing with each other economically through less stringent regulation (SMCRA §101 Congressional Findings (g)). But passage of the law was only the beginning.

> "The long struggle to enact a surface mining bill was to continue through the subsequent efforts to implement it. The environmental community pressed for strict regulation, while the industry sought the flexibility it had not gotten in the statute. At the same time, the states sought maximum flexibility and discretion. The results have been significant acrimony, numerous regulatory revisions, and litigation over virtually every aspect of the program."(McElfish and Beier 1990)

Controversy Over Variances From Approximate Original Contour Requirements

Over the last decade mountaintop removal mining has become a common mining technique in Appalachia. This method technically requires a variance from AOC, which is to be justified by a proposed postmining land use that needs an alternate, i.e. level, landform. According to the regulations, these postmining land uses must meet a set of criteria meant to ensure that the land uses

are more economically productive, or a "higher and better use." [3] But guidelines by which regulators can evaluate whether proposed uses meet such criteria do not exist.

There has been recent citizen outcry over mountaintop removal mining in West Virginia and Kentucky, especially in regard to the impact of valley fill on streams and their headwaters. Citizen complaints and media attention resulted in the Office of Surface Mining conducting an investigation into the West Virginia program and its provisions for both mountaintop removal and steep slope mining, especially in regard to variances from returning the land to AOC and requirements for designating postmining land uses. The report focused on two issues:

> First, does WVDEP [West Virginia Department of Environmental Protection] currently use appropriate standards in evaluating whether a particular postmining land configuration constitutes a return to AOC? Second, in situations where WVDEP has determined that a waiver from AOC requirements is necessary, has it required appropriate postmining land use in granting the waiver? (U.S. Department of the Interior 1998).

The investigation found that several permits which required variances from AOC did not designate approved postmining land uses, that **no** permits proposing alternate land uses (uses other than restoring the premining use) adequately completed required documentation to justify either the uses or the AOC variance, and that there was little difference in the degree of topographic change between those sites which were to be returned to AOC and those which were requesting a variance (U.S. Department of the Interior 1998). One issue was differences in language between the

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[3] SMCRA Section 515 *3)"In cases where an industrial, commercial, agricultural, residential or public facility (including recreational facilities) use is proposed for the postmining use of the affected land, the regulatory authority may grant a permit for a surface mining operation of the nature described in ... (c)(2) where-*
(A) after consultation with the appropriate land use planning agencies, if any, the proposed postmining land use is deemed to constitute an equal or better economic or public use of the affected land, as compared with premining use;
(B) the applicant presents specific plans for the proposed postmining land use and appropriate assurances that such use will be -
(i) compatible with adjacent land uses;
(ii) obtainable according to data regarding expected need and market
(iii) assured of investment in necessary public facilities;
(iv) supported by commitments from public agencies where appropriate;
(v) practicable with respect to private financial capability for completion of the proposed use;
(vi) planned pursuant to a schedule attached to the reclamation plan so as to integrate the mining operation and reclamation with the postmining land use; and
(vii) designed by a registered engineer in conformance with professional standards established to assure the stability, drainage, and configuration necessary for the intended use of the site;

approved state program and the federal program, and differences in interpretation of the same language. However, there was clearly failure to complete the documentation required by federal and state levels both in law and regulations. This is consistent with findings of a less comprehensive review of surface mining permits in Kentucky which were proposing postmining land uses different than premining land uses (Merkin and Nieman 1996).

Planning and Development

The Appalachian Regional Commission (ARC) was formed because of concern for persistent poverty and unemployment in Appalachia. The Appalachian Regional Development Act was signed into law in March of 1965. Poor roads, inadequate utilities and isolation from centers of commerce all were noted as factors contributing to underdevelopment. The Appalachian Development Highway System (ADHS) was one of the pivotal development strategies for the area. The Federal Government underwrote the huge costs of road building in the rough topography of the area. As of September, 2001, 426.3 miles of road in the ADHS were authorized in Kentucky, with 384.7 built, 10.6 under construction and a mere 31 miles yet to be initiated. (Fig. 1)

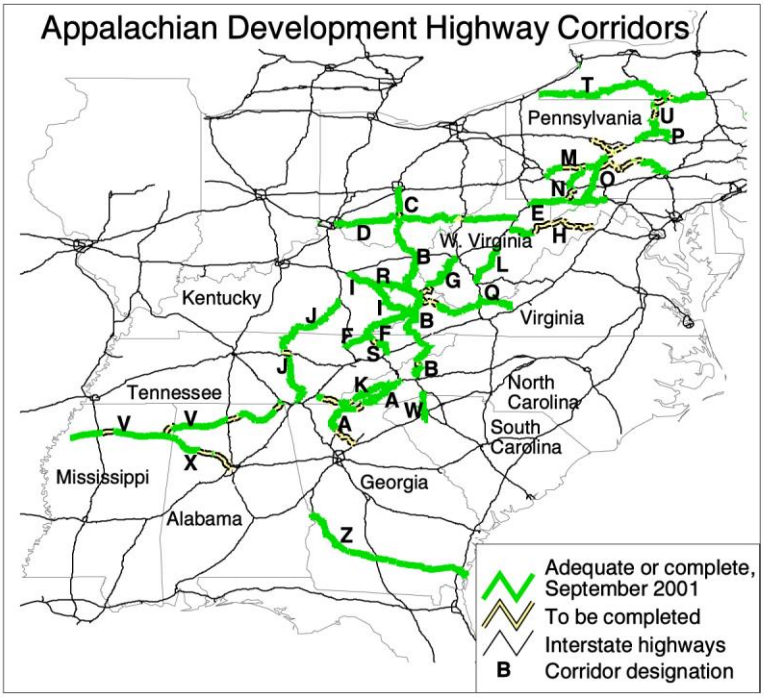

Figure 1. Appalachian Development Highway System

Other strategies for assisting Appalachia included the creation of Local Development Districts, (in Kentucky called Area Development Districts) to provide assistance in regional planning and investment in utility infrastructure, particularly water systems. ARC also supported the strategy of targeting investment to growth centers, or the areas "where there is a significant potential for future growth, and where the expected return on public dollars will be the greatest." (Appalachian Regional Development Act of 1965, Section 2(a)). In Kentucky, the ARC has spent ten times more on roads than the next largest category of expenditures, Community Development, which includes water and sewer system projects (ARC 2000). Other major program areas include education and job training, health, and housing.

Lack of flat building sites in Appalachia has been an impediment to development, but it has not been the only impediment. Lack of transportation, utility and communication infrastructure, affected also by rough topography, has delayed development or driven the cost of development out of line with other locations. Current Kentucky Cabinet for Economic Development criteria for advertising development sites include:

> five contiguous buildable acres out of the floodplain; having at least a 6" water main within 2500 feet of the site and a water system with an excess capacity of at least 50,000 gallons per day; having at least a 4" forced main sewer or 8" gravity sewer within 2500 feet of the site and a system with an excess capacity of at least 50,000 gallons per day; having an electric service provider; having access to the site by road or easement.

An economic development handbook prepared for the Appalachian Regional Commission included this caveat in its preface:

> Limitations. The premise of this handbook is that in order to expand and attract business to your area, it is necessary to address the constraints that now hold back such economic growth from occurring. The constraints may relate to many factors, including (but not limited to):
>
> (1) available workforce size and skills;
>
> (2) costs of obtaining materials;
>
> (3) costs and reliability of providing goods to markets;
>
> (4) taxes and utility costs;
>
> (5) range and cost of housing available;

(6) availability of supporting infrastructure;

(7) availability and cost of industrial parks and business sites; and

(8) business climate.

New highway links and improved highway segments can help address some but not all of these factors. They cannot by themselves overcome a lack of skilled workers, or housing, or industrial parks with sufficient supporting infrastructure, or reasonable utility costs. In some communities, a highway will help bring economic development only when remaining constraints are also addressed (Economic Development Research Group, Inc. 2001).

Similarly, building sites alone, without infrastructure, are insufficient to generate economic activity or even residential development. Other problems affecting economic development in Appalachia include workforce preparation, insufficient leadership or political will, and a scarcity of capital available for local business ventures. A study for the ARC in 1975 stated

> A number of factors are related to the suitability of surface mined land for various post mining categories of land uses. Among these are the demand for developable land, location, accessibility, and development cost. In areas where the supply of developable land is limited, it is suggested that surface mines be categorized according to broad land use groupings and that reclamation practices be applied which would contribute to the most advantageous use of the land (Eastern Kentucky University and Mayes, Sudderth and Etheredge, Inc. 1975).

In other words, the consultants recommended that officials should take a regional approach and evaluate what areas would be most suitable for agricultural uses, industrial uses, residential uses, etc. based on the local and regional economy, transportation, utilities, water resources, and other important factors. Individual reclamation plans could then more easily be reviewed within this framework.

This kind of assessment is what SMCRA is referring to in section 515(3), yet this is never done. In a proposal of criteria to determine sites worth reclaiming for business or industrial uses, submitted to the Postmining Land Use Tactic Team of the Kentucky Economic Development Cabinet, engineering constraints of a site such as depth of fill, type of rock, final topography, etc. were only one aspect of the assessment. Also included were such factors as the distance of the site to utilities and major roads, the proximity of other development or developable land to the site as a measure of market demand, and the need for development as measured by local employment or poverty rates

(Nieman, 1995). Permit engineers are not trained in this sort of land use study. They tend to focus on the physical factors of a particular site, and not its economic or social context. However, context is immensely important in determining appropriate and viable land use.

The Example of Star Fire

Star Fire is a large surface coal mine near Hazard in Perry County, Kentucky. The approximately 17,000 acres extends into Breathitt and Knott counties and largely had been assembled under single ownership by the time Standard Oil of Indiana took control of the property in 1977. Their mineral interests were spun off as a separate company in 1981, Cyprus Minerals. Southern Realty Resources, Inc., was the subsidiary, which handled land acquisition and disposition. Cyprus Minerals merged with Amax, Inc. to form Cyprus Amax Minerals Company in 1993 and the Star Fire site was sold to Addington Enterprises in 1999.

The site had been mined using the contour method prior to the enactment of SMCRA, and had not been reclaimed when Cyprus took it over. There are several separate permits on the property, but having such a large site under single ownership simplifies many aspects of mine planning, permitting and operation. It also makes possible the consideration of potential post-mining land uses on an entirely different scale than the small benches scattered throughout Appalachia, holding a home or two here or a small store there.

Managers at Southern Realty Resources saw the potential for Star Fire to become a site for residential and even industrial development in the future, when the property was mined out.

> "Southern Realty ... has as a part of its mission statement the responsibility and charge to assist our various companies in maximizing the use and return from the fee properties that we own. Not only do these properties supply our current lifeblood in the form of substantial coal reserves, but they also have ancillary uses and residual values... [The Star Fire Project] presents an opportunity to demonstrate the positive benefits that can be gained through careful planning to assure the highest and best use for our properties after mining operations have been concluded." (Cyprus Coal Company et. al. 1987)

In the same document, the property supervisor stated,

> "Given the proximity of the Star Fire tract to KY-80, and the brief travel time to both Hazard and

Hindman, we concluded that development of land, even only for housing use, would result in such demand that we probably could sell **all** property we made available for such use, and at prices that could be substantially below what's now available in the area, while providing Southern Realty with a **most** attractive rate of return." (Fig. 2)

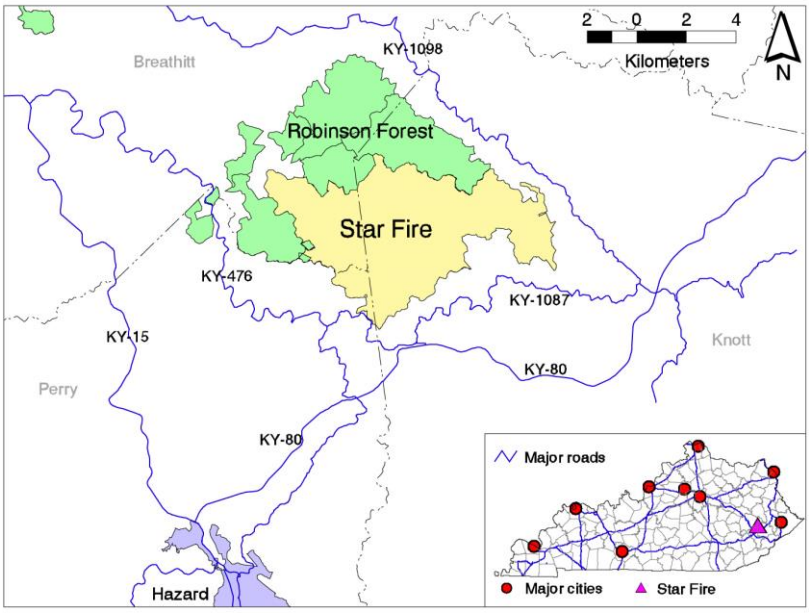

Figure 2. Star Fire location

Key to their vision was a planning approach, which looked at a variety of short term, and long-term land uses. In the short term, reclamation plans provided the environmental protection required by SMCRA in terms of controlling erosion, covering highwalls, and protecting water resources. In the long term, the land configuration potentially could support development of housing, businesses and industry. Importantly, Cyprus funded research into the settlement processes in the deep fills, both over the old mountain tops and in the valleys. They also studied the water storage capacity of the valley fills, knowing that water is a necessary factor in development.

Personnel at Cyprus also developed working relationships with local and state level economic development specialists. In discussions of future development of the property, one of the options

frequently mentioned was a power plant. The 1987 report advocated evaluating "on-site clean coal burning for industrial scale co-generation of electrical power and steam....coupled with recruitment of "energy intensive" industries to locate on Star Fire."(Cyprus Coal Company et. al. 1987). This was seen as a competitive advantage for the site, one that would make the location attractive to industries, which were heavy consumers of power. It also fit nicely with the business of coal mining, becoming a cost-effective market for coal through eliminating transportation costs.

In 1988, Star Fire developed a lake and imported some Canada geese, a test of the ability of the mine spoil to sustain a small water impoundment useful for wildlife habitat (Nieman and Meshako 1990). Elk were brought to the site in 1997 after Star Fire and the neighboring University of Kentucky Robinson Forest entered into a formal agreement along with the Kentucky Department of Fish and Wildlife Resources to designate both sites together as a wildlife management area [Cyprus-Amex WMA, now Addington Enterprises WMA](Nieman and Merkin 1995). The site has also hosted an annual trail ride in which dozens of horse enthusiasts trailer in their animals, camp on site, and ride on reclaimed portions of the site. These practices provide short-term benefits in terms of recreation and a more diverse vegetative cover than standard hayland/pastureland requirements. By encouraging not only researchers but also the general public onto the land, Cyprus created a situation, which built trust in the quality of their reclamation practices, because the results were visible to so many people. Neither recreation nor wildlife uses precluded the future use of the land for more intensive development, however.

Land in Eastern Kentucky, which is easily developed, is at a premium. The topography is steep and soils are shallow, except in areas, which are flood prone. Not only is most suitable land already occupied, but also many buildings have been built in the flood plain and continue to sustain damage from periodic flooding. This scarcity of building sites has skewed prices for land close to existing development and major roads. These facts are the basis of claims that mountaintop removal mining provides a valuable resource -- level land out of the flood plain. But SMCRA requires that each mining operation prove that a land use, which is different than the pre-mining use, is both needed and appropriate to the site.

Most of the Star Fire property had been actively mined since the mid-1960's and remained in a disturbed condition, so the various permits on the property primarily list unmanaged forest and mined land as the pre-mining land use. The vegetation survey for one permit noted, "The perennial

stream bed vegetation has long ago been removed and continual disturbance has prevented the return of soil and moisture conditions necessary for a riverine community."(KDSMRE coal mining permit 860-0003) Because of this, almost any land use declared would constitute an improvement, thus making the legal requirement to return the land to a condition capable of supporting the pre-mining land use or a higher and better use really a formality.

Regulatory Constraints

The designation of post-mining land uses is constrained by regulations. When the declared post-mining use is different than the pre-mining use, particularly when the mining company is requesting a variance from return to AOC, section 515(3)(B) requires applicants to verify the general feasibility of a proposed project in regard to the market or demand for a specific type of development and the existence of infrastructure like water and sewer service. The requirements also try to ensure that development will not negatively impact safety and environmental protection, that reclamation occurs in a timely manner and that the mining company has the financial capability to complete the development.

There is an inherent conflict between these protective measures in the mining law and the realities of land development. The timing of capital-intensive developments requires that many factors come together at the same time, but capital is scarce in Appalachia. For a project to be feasible the availability of capital must match the onset of demand. This is difficult to predict for a specific time frame as required by SMCRA. Often there must also be coordination with state-funded incentives or assistance with construction of infrastructure such as roads or water systems. Admittedly, the requirements in SMCRA came about in response to the hundreds of unrestored contour benches which were supposed to be turned into home sites or used for businesses, and were simply abandoned. But it is unrealistic to try to pinpoint the timing of commercial or industrial development in coordination with a particular mining plan. So companies declare the least expensive reclamation plan, which is acceptable to regulators, usually hayland/pastureland, then ***if*** an opportunity to build presents itself, they will submit an amendment to the permit. This is time consuming and somewhat costly, but currently the only feasible strategy. If a permit requires a variance from AOC, the post-mining land uses are supposed to require that more level land. The

alternative land uses originally named in the various permits for the Star Fire property include grazing, pastureland and wildlife, although these do not *require* level land. (Fig. 3) In the meantime, Star Fire managers kept their eyes open for opportunities for site development.

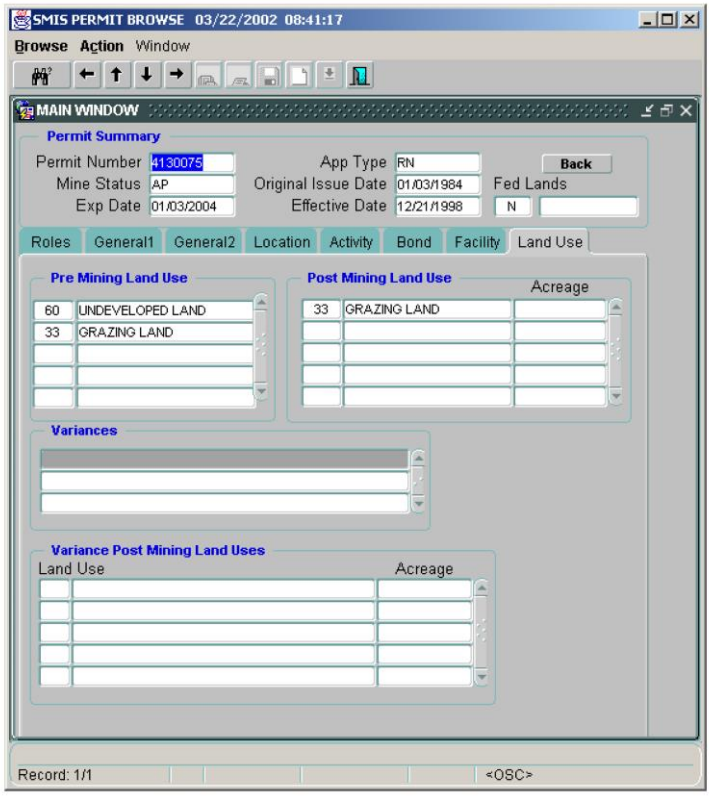

Figure 3. Surface Mining Information System permit summary for land use.

In 1993, discussions were held with executives of Trus-Joist MacMillan, a structural lumber company seeking a plant location close to Appalachian timber sources. After touring several sites, including Star Fire, Trus-Joist chose to locate on a mined and reclaimed site several miles away, which was just a few hundred yards from Highway 15. Mining had finished at this site some time before, and most importantly, the road to the site was easily brought up to industrial road standards. Though the Star Fire site is very near Highway 80, the mile and a half or so distance has proved a

major obstacle to developing the site. The existing haul road did not meet public road standards, especially in regard to its steep grade. Bringing the road up to standards would be quite expensive, and neither the property owners nor the potential tenant were willing to make the investment. The state could not assist within the time frame required by the company, so they located at a more accessible site nearby.

The most recent development proposal for Star Fire is a power plant project by a company called Enviro-Power, LLC. This plant is to be fed in part by local waste coal. The locational advantages of this site include ready access to the fuel source and proximity to a major "crossroads" in the national power grid. Limestone needed in the power plant's process can be hauled back on the return trip of the trucks Addington uses to ship coal from Star Fire to a power plant near Lake Cumberland. Also, the site has no immediate neighbors to be concerned about disturbing. The power plant will make parts of the site less suitable for residential or commercial development, but may increase the desirability of the site for certain industrial uses. While some in the community are concerned about potential impacts of the power plant emissions, that is a question less related to the particular site than to the region as a whole. Any location within 30 miles would elicit similar concerns, and this is a question beyond the scope of this paper. A benefit to the region as a whole is the removal of many of the coal waste piles scattered in the area. But this project, just as with the Trus-Joist plant, requires road improvements. In this case, negotiations are underway on an agreement to complete those improvements. In the meantime, all of the required permits from the EPA and the Department of Energy have been acquired.

The power plant is an industrial use of the site. It will be located over the mined-out bench in the vicinity of "Potato Knob." This area, while no longer actively being mined, has not yet achieved bond release. This will require that a permit amendment be submitted, and technically, construction should not begin until the amendment is approved. On other projects in the state, this has not been followed strictly. The Wendell Ford Regional Airport is one such project, though the initial work on the airport occurred during the early years of SMCRA while much about implementation of the law was unclear or even in litigation. One of the officers of Enviro-Power, who has a long history with the site, said that while submitting a permit amendment is tedious and time consuming, he does not consider it an impediment to the development of the site. He finds that regulatory officials have been cooperative and understand the intent to achieve a higher use on this property. Ongoing

interaction with regulatory personnel through the research programs sponsored on site may have helped develop this cooperative atmosphere, including giving mining and reclamation personnel a clearer idea of what regulators want to see and how they do their jobs.

Conclusion

At the Star Fire site, many factors have come together to support the development of the property for a variety of uses. The site is large and owned in fee simple by a single entity. The site is near Hazard, one of the strongest local economies in the region, and it is reasonably close to major transportation corridors. Property managers, from the onset of mining, took a long-term view toward what might happen on the land 20, 30 or more years later, when mining had been completed. They remained flexible as to what might occur in the short term, and maintained a balance between their long term goal of development and short term responses to changes in the mine plan dictated by coal market fluctuations. Although the overall purpose of the parent company was to mine and market coal, the division with responsibility for the land was able to integrate creative approaches to reclamation within the parameters of cost-effective reclamation practices. The managers developed good working relationships with inspectors, regulators and public officials, leading to greater cooperation when the company wished to conduct research or experimental practices on site as well as facilitating the approval of permit amendments. Even with all of the positive factors supporting eventual industrial or commercial development on this site, however, it has not come about easily. There are still cost and environmental factors involved with providing access and with site engineering, which can work against reclaimed surface mines as development sites.

Star Fire is a good model for the practice of long term planning for postmining land use. Yet there is a limit to the number of surface mining sites close to market and population centers, therefore a limit to how many can be expected to be reclaimed with housing or commercial development. Some small number of isolated sites might have potential for uses such as prisons which can be further from other economic activity, though these still must have access to good roads. As the one report from 1975 suggested, it would be appropriate to designate areas within the coal mining region as more suitable for various kinds of land uses based upon contextual factors. These planning frameworks can be updated periodically as local economic conditions, population

distribution or major infrastructure change over time.

For some sites the best contribution to local development may be restoring them to the extent possible to a pre-mining diverse forested condition, in support of scenic values, water quality, and stream habitats which sustain a tourist-based economy. Some will be good for cattle grazing, some for timber production, and a few for golf courses. SMCRA requires that to justify valley fill, a productive postmining land use, which requires such fill, must be proposed and defended. In general, this requirement has not been enforced. For many existing surface mines, fill cannot be justified as required by current law, and we as a society have to decide if keeping the price of coal low and maintaining jobs in mining are sufficient reason to allow the environmental disruption caused by valley fill. Other sites, which would be appropriate for industrial or commercial development, are forced to juggle the regulations to remain within the letter of the law, in order to be prepared for eventual development. Steps should be taken to identify and encourage viable development possibilities, adjusting regulations appropriately.

Further research needs to be done to document the history of postmining land use in the region, including comparing real estate sales prices of reclaimed sites to unmined sites, noting location and other development factors. Also, the originally declared postmining land use, permit amendments, and implemented land use should be tracked over time for mines which have received variances to AOC, along with an economic analysis as to the productivity or success of the postmining land use. With the tools provided in Geographic Information Systems, and the recent on-line availability of Kentucky's Surface Mining Information System, this task is becoming feasible.

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