Honorable Beecher Charmbury  
Secretary of Mines  
Commonwealth of Pennsylvania  

Dear Dr. Charmbury:

It is our extreme pleasure to submit to you and the Coal Research Board the following report — *A Landscape Architectural Approach to Reclamation and Development Potentials of Deep Anthracite Strip Pits*. This represents the culmination of efforts over the past year toward achieving a creative approach to successful solutions of the strip mined areas of the Anthracite Region.

Because many of these areas possess great qualities of beauty, both man made and natural, and contain large acreages of land which is needed for our expanding population, the challenge was to discover a way in which the land could be restored to accommodate the necessary needs of man and at the same time take advantages of site characteristics which are too often erroneously labeled under a black cloud of misunderstanding that all strip pits are liabilities. This report is the story of an attempt to discover a new approach and to clear up misrepresentations.

We wish to express our appreciation to Dr. William Spackman and Dr. David Maneval for their considerable assistance in this study. Our thanks and gratitude to Robert Gladstone of Robert Gladstone and Associates for his criticism and assistance in supplying and interpreting the necessary economic data. With them and with you, we look forward with excitement and sincere interest to the application of these approaches.

Respectfully submitted:

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James R. DeTuerk  

Department of Landscape Architecture  
The Pennsylvania State University
Does the Eagle know what is in the Pit?
Or wilt thou ask the Mole?
Can Wisdom be put in a silver rod?
Or Love in a golden Bowl?

The Book of Thel (1789)
Thel's Motto
The Study

The basic intent of this study was to find a common approach based upon the relationships of compatible land uses and to relate these uses to deep strip pit areas, local and state wide transportation systems, and state and local parks, as well as to the economic bases of individual communities.

The Pennsylvania Anthracite Region, as shown on Plate 1, covers approximately 760 square miles, of which 480 square miles are coal fields. As a whole, the region comprises the greater part of ten Pennsylvania counties, as well as eight cities in the northeastern part of the state.

The last twenty years have witnessed the passing of the Anthracite Epoch in the Commonwealth of Pennsylvania. A beautiful region of valleys and forested hillsides with clean rivers and streams gave way to an industrial expansion that transformed the area into one of our nation's economic focal points. For a period of more than 140 years from the opening of the West until the end of World War II, the Anthracite Region provided the necessary natural resources for the rapid growth of the United States. The end of the epoch was marked by economic depression and a devastated landscape. A substantial proportion of the land surface had been mutilated—in many cases unavoidably, because the coal could not have been mined by any different method—and human indifference during a time of economic boom or war resulted in a lack of concern about the future outlook of the area.

At the present time more than 112,000 acres of land have been disturbed by mining operations in the anthracite region. Because of the vast devastation and the lack of economic stability, the future of this region and its people depends upon successful reclamation and development of the land.

The anthracite region, although within easy access to great masses of population, is a forgotten land. This fact is made more remarkable because of the proximity of the megalopolis of the eastern seaboard, which extends from Boston to Norfolk and contributes over 20 per cent of the entire population of the United States and is but two to three hours away by automobile. In the past the anthracite region suffered because of the lack of adequate highways, but with the opening of the East-West Keystone Shortway (Interstate 80) and the Anthracite Expressway (Interstate 81), the problems of accessibility will be solved. (See Plate 2.)

Because of its strategic location and access to major population areas, the anthracite region offers great recreation potential as well as expansive areas for industrial and residential growth.

Therefore, those devastated areas so often condemned by citizenry as unnecessary evils could, with proper development, become the potential future resource of the region.

The “Anthracite Character” records a historic past, endures a blighted present, and promises a bright future.

If we view the earth's surface as we move from location to location, we realize that there is an apparent harmony and unity of natural elements—undulating ground forms, flora and fauna, and rock formation. The unscathed landscape possesses a natural character.

When man destroys or manipulates the physical elements of his earthly state, he alters the natural elements and produces many artificial characteristics, which frequently conflict with the natural scene and have a poor visual quality.

Because natural unity has been destroyed, strip mine reclamation must start with a complete and concise analysis of man made characteristics. To by-pass this step is to settle for cosmetical surface treatment.

In this investigation, landscape characteristics which exist in the devastated areas of the anthracite region were analyzed and categories established. From these characteristics—basic to all sites—the essential matrix of any attempt to program reclamation efforts can be formed.

Let us imagine that we are visiting one of the many strip pit areas in the anthracite regions. We see that the harmony and unity of the natural elements have been disrupted, and
we are disturbed because some of these man-made characteristics, incongruous landscape elements, have resulted in ugliness.

After a thorough investigation and analysis of many strip pit areas, the following man-made characteristics were identified and defined:

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Slopes</td>
<td>Exist because of the necessity to manipulate the earth's natural crust to obtain coal. Due to the lack of legislation requiring backfilling, more slopes were produced by areas being excavated. This characteristic becomes very important because it provides differences in elevation, as well as areas that are adaptable for winter sports and mountaineering efforts.</td>
</tr>
<tr>
<td>Facades</td>
<td>Important because the viewer must look directly at the subject. The variety of existing facades in strip pits presents unlimited possibilities for enclosure, privacy, rock strata investigation, and separation of activity areas.</td>
</tr>
<tr>
<td>Voids</td>
<td>One of the valuable characteristics of strip pits is voids. Because of the geological formation of anthracite coal, the veins were in great saddles directly adjacent to layers of rock. Excavation of veins resulted in the impoundment of water, which provided valuable recreation resources as well as excellent museums of anthracite mining.</td>
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<tr>
<td>Edges</td>
<td></td>
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<tr>
<td>Color</td>
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<tr>
<td>Masses</td>
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<tr>
<td>Stillness</td>
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Coal operators, having no other recourse, were forced to place the coal in piles of overburden. This characteristic becomes very important because it provides differences in elevation, as well as areas that are adaptable for winter sports and mountaineering efforts.
**Edges**

Edges constitute a significant, incongruous characteristic which must be altered, safeguarded, or eliminated in order to secure successful reclamation. Because of the nature of anthracite excavation, edges become conglomerate accumulations of all types of debris. These are safety hazards which must be corrected.

**Color**

Color is the one characteristic of the anthracite strip mine pits which offends a visitor. The resident, however, has accepted the color characteristic as a "fait accompli." The brownish-black color of the over-burden and coal refuse together with the "yellow boy" of the acid runoff gives an impression that the entire area is one of devastation and ruin. In the summer the color is softened by the green and white of the birches, but this is for only short periods of time.

**Planes**

The resultant horizontal planes of areas between slopes and facades provide suitable areas for human activities; in many cases the land was not as valuable before mining operations because of rough topography and terrain. The filling of voids with water has resulted in the creation of new planes which provide additional areas for man's use.

**Monotony**

Because the pits exhibit all or many of these incongruous characteristics, and because the visual impact of the color and slopes is strong, the resulting appearance is monotonous, particularly because the only vegetation that grows in unreclaimed pits is white birches.

**Masses**

Masses of over-burden are dominant characteristic elements that in many instances must be reshaped and remolded before reclamation and re-use can be accomplished. Nevertheless, the masses impose a new and rugged character on the landscape, and thus can be an important focal point in design and re-use.

**Stillness**

The strong impact of solitude as a compelling characteristic exists because no restoration has taken place. The sound to which the human ear is attuned is that of the wide-open spaces. The careful listener may hear signs of animal life, as wild deer and other forest creatures are venturing back because of the natural ecological movements of nature correcting errors of mankind.

The characteristic of stillness is important because it is the same that exists in "pure" wilderness, of which we have little left in America.

In the following studies our design approach has been based on the detailed analysis and integration of the preceding characteristics in order to establish a new and lasting order to the over-disturbed and devasted qualities of natural harmony and unity:
Plate 1—Pennsylvania Anthracite Region.
Plate 2—Relationship of Anthracite Region to Northeastern United States.
The Morea Strip Pits are unique in that they are rural in location, lineal in form, and are sandwiched between two areas of undisturbed natural vegetation. The slopes make a definite division to the north; and alignment of the proposed Interstate Route 81 becomes the natural dividing boundary to the south.

Two small villages, New Boston and Morea, which are adjacent to the mine pits area represent nothing more than a nostalgic remembrance of days gone by.

Mine voids at the Morea Pits present qualities that can be utilized in successful mine reclamation work. The three mine voids in the area studied contain many millions of gallons of water at the present time; during the droughts of the summers of 1965 and 1966 they provided an emergency source of water for the Pottsville area. There is evidence that recreational activities persist here despite inaccessibility and lack of organization.

Adjacent to the eastern portion of the site are an airport and a recently completed golf course. To the south of the airport is Locust Lake, a successful privately owned recreational center.

At the proposed interchange of Interstate 81 and Route 122 is a fledging industrial park, with a few industries serving the city of Frackville.
Plate 3—Existing Site Character—Morea Mine Pits.
Description of Proposed Development

Because of its unique amenities, potential man-made characteristics, accessibility by regional highways, and location, the Morea Mine Pit area could become a widely diversified recreational area.

The land areas adjacent to the bodies of water would be developed for day-use and cabin colony facilities. The lakes are suitably planned for a wide variety of uses including swimming, boating, and geological exploration. The Morea Pool becomes the site of a flash distillation water purification plant that will not only provide the area with a potable source of water but will also produce electricity.

Large areas to the east will be reforested and utilized for hiking, horseback riding, and wilderness camping.

The villages of New Boston and Morea are redeveloped and renewed as living and support facilities for the Morea recreational area.

Locust Lake is expanded as a Project 70 site providing an additional area of wide range recreational activity.
The Harwood-Hazleton Strip Pit is of a very definite urban nature. Hazleton, a prosperous city with a high growth potential, has been emasculated by the disturbed and devastated mine pit areas adjacent to the boundaries of the city. Although this has resulted in large areas of monotonous colors and drab characteristics, it has controlled the pattern of suburban growth. This development has occurred only to the northwest of the corporate limits, where the Valmount Industrial Park and the Penn State Campus are located.

The Harwood-Hazleton site is of sufficient size, scope, and varying characteristics to permit a wide variety of possibilities for reclamation and redevelopment. The existing villages suffer from being isolated in a monotonous sea of dismal colors.

The voids to the southwest, which are presently filled with water, provide an important array of man-made characteristics which can be utilized for many different purposes.

An expressway now under construction from the interchange of Interstate-81 will provide an excellent and new approach to Hazleton. With the development of this road, the adjacent areas become more valuable and important as land with a “future.”
Plate 5—Existing Site Character—Harwood-Hazleton Mine Pits.
Description of Proposed Development

The plan of proposed development for the Harwood-Hazleton site follows the basic existing man-made characteristics of the mine spoil areas.

The entire area is to be developed as an integral part of Hazleton, but at the same time it will provide the necessary open space, commercial, recreational, and cultural facilities that form the heart of any urban complex. The existing shopping area is expanded, and the voids with steep slopes become the integral part of a most challenging 36-hole PGA Golf Course. A village center with educational, religious and recreational facilities becomes the loci for the development of large areas of single and multi-family housing.

At the interchange of Interstate-81 and the Hazleton Approach Expressway is to be located the official agency of Mine Reclamation with a motel and visitors center. The visitors’ center will house a museum of the history of anthracite mining, geological exhibits, and will conduct tours of live experiments in mine reclamation which are in progress.

The present Valmount Park is extended on land to the west, and Penn State’s Hazleton Campus expands.

Numerous water-filled voids to the southwest become part of a new city park offering a wide variety of activities.
Plate 6—Proposed Site Development—Harwood-Hazleton Mine Pits.
Characteristics of the Site — Big Creek Pit

The Big Creek Pit is located northeast of New Philadelphia and is adjacent to the Silver Creek Reservoir. Small in size, it presents a very different problem in scope from the massive Morea and Hazleton sites.

A large void is the dominating characteristic at the Big Creek Pit. Containing over 420,000,000 gallons of water, it has a large horizontal surface plane juxtaposed to steep slopes, vertical planes, facades and edges. A large mass of over-burden forms a high promontory with an access road which was utilized by trucks in the course of mining operations.

At the western edge of the void is a “natural” access point which has been created by the man-made formation of large masses of over-burden and debris. Except for the area to the immediate west and southwest, very little land area is disturbed, except for that in close proximity to the voids.
Plate 7—Existing Site Development—Big Creek Mine Pit.
Description of Proposed Development

Big Creek Strip Pit has the potential for becoming the prime example of successful strip mine reclamation through complete analysis and use of existing man-made characteristics. The "natural" access becomes the main entrance to a lodge facility of a "mine reclamation state park." The lodge, complete with restaurant, recreational facilities, and overnight accommodations, is located on the edge of the void which becomes a lake for boating, sailing, and other water sports. Adjacent facilities for swimming, tennis, and horseback riding make the lodge a complete recreation center.

If the steep slopes, facades, and edges are utilized as barriers for separation of activities, the level areas to the southeast become valuable day use and picnic areas. Adjacent to and in undisturbed woodland are clusters of cabins which might be rented or leased to the public as an economic means of helping to make this reclamation "a pay-as-you-go" project.

Near the entrance road, on reclaimed and reforested mine spoil land, an overnight tent and trailer facility provides another type of living accommodations.
Plate 10—Big Creek Mine Pit
Plate 11—Big Creek Mine Pit.
Plate 12—Big Creek Mine Pit.
Market Potentials

Based upon the analysis of the case study sites, we believe that the market potentials appropriate to the broad range of uses proposed are definitely capable of development.

Although two of the sites involved are sizeable in relation to the indicated rates of utilization, the basic market forces in the area should support in appropriate degree the activities and development proposed in each of the three sites.

There appears to be no doubt that the basic proposition is sound and that more than revegetation can be done on the reclaimed ground. However, stringent "tests" involving specific market determinations, issues of development scale, timing, and economic and financial feasibility would have to be undertaken. These tests would both qualify as well as quantify appropriate development features and characteristics, as well as establish the specific extent of utilization which might be made of the site for the proposed purposes.

With respect to the Hazleton site, the basic market forces include a modest pattern of growth in the urban area. Accordingly, land and building requirements for this new growth—as well as modernization of existing commercial, industrial, and residential facilities—are indicated. In addition, public and institutional uses of various types would also be required, not only to support the normal growth pattern in Hazleton private market sectors, but also to serve the community-at-large.

Potential need and effective demand for facilities of the regional recreation and resort type, such as those proposed for the Morea location are also based on market forces affecting regional development. Among them are population and personal income gains, and increased leisure time allowing for utilization of such resort and recreation facilities as fishing, swimming, boating, golfing, camping and hiking, and skiing.

There is already evidence that some markets focus on the anthracite region. Experience at the successful resort and recreation developments in adjacent Pocono Mountain areas, as well as directly in the anthracite region counties, provides specific examples.

Economic Factors

The direct and indirect economic benefits resulting from active developments at reclaimed mine sites can be specifically identified. The diverse jobs created by the individual activities at the reclaimed site would be directly involved—during construction phases and subsequently the operation of resort and tourist oriented facilities which would attract earnings and income to the local area from elsewhere. In addition, the jobs created directly on the site would support additional service jobs off the site but still in the area. Finally, community viability—hence attractiveness for new industrial and economic expansion—would be enhanced by the park and recreation facilities proposed.
One of the key factors influencing success of the proposed developments in this study would be the methods and effectiveness with which the redevelopment program was carried out.

In order to realize and coordinate such a program, we propose the creation of a regional reclamation planning and redevelopment entity for the anthracite region. Such an agency could bring together both public and private interests and could substantially increase the potential for successful programs in this region.

Basic to this concept are the following factors:

1. The extent of disturbed strip mine areas in the anthracite region is substantial. Within the framework of available market and economic opportunities in the region, it would be essential to carefully coordinate the type and extent of redevelopment at the various sites as well as to stage redevelopment with respect to region-wide programs. The appropriate area of jurisdiction for the proposed entity should, accordingly, be the entire anthracite region.

2. Specific actions for selected aspects of the redevelopment program might most appropriately be undertaken by an entity such as the one proposed. Involved, for example, might be expenditures for basic improvements at the outset with minimal returns in relation to the degree of risk involved. This type of "seed" investment would ordinarily not be attractive to private developers, even though such investments are frequently critical for the total program. The proposed entity might well undertake some portion of these activities in conjunction with other agencies of local, state, and federal governments. This role would appear to be particularly important at the outset of the program to "launch" the reclamation and redevelopment activities.

3. Promotion and follow-through in connection with the redeveloped areas—both for recreational and urban uses of various types—might extend beyond the involvement, interest, and even capability of current individual agencies or private organizations. The success of the over-all program would rest directly on the strength and effectiveness of promotional and appropriate follow-through actions. These would best be handled through an entity of the type proposed.
4. Substantial funding is available from a variety of sources at federal and potentially, state levels. Included among these sources would be the Department of Housing and Urban Development, Economic Development Agency, Office of Economic Opportunity, Bureau of Public Roads and the Bureau of Outdoor Recreation’s open space and recreation program. The proposed reclamation planning and redevelopment entity might most effectively coordinate the use of these funds as well as maximize their availability to this program. Even apart from specific funding, the various state and federal programs might best be brought to a focus with respect to the objectives of the reclamation redevelopment operation through such an agency, specifically concerned with these objectives.

5. Such an entity would be a working reality evidencing that the responsibility of strip mine reclamation belongs not to the state and Federal governments or private interests but to every citizen of this Commonwealth.
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