Inventory and Assessment of Cultural Landscapes

Delaware and Lehigh Navigation Canal National Heritage Corridor

For:

The Delaware and Lehigh Navigation Canal
National Heritage Corridor Commission

Supplemental Agreement No. 10 to Cooperative Agreement
No. 4000-9-8004 with the Mid-Atlantic Region of the National Park Service,
U. S. Department of the Interior

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Background

This report describes an investigation of cultural landscapes contained in the Delaware and Lehigh Navigation Canal National Heritage Corridor. The cultural landscapes of the Corridor are identified and evaluated for their potential for interpretation, preservation, and management.

The investigation was conducted by the Department of Landscape Architecture at the Pennsylvania State University for the National Park Service in 1990-1991. Primary authors of the report were Daniel Jones, Associate Professor of Landscape Architecture; Thomas Yahner, Assistant Professor of Landscape Architecture; and Timothy Johnson, Assistant Professor of Landscape Architecture. A. Mark Battaglia, Professor of Landscape Architecture, and Bonj Szczygiel, graduate student in landscape architecture, participated in background research. Martha Ruhe, graduate student in landscape architecture, participated in research, field work, and mapping. Peirce Lewis, Professor of Geography, was a general consultant to the project. Jackie Bonomo assisted in geological mapping. Report production assistance was provided by departmental staff members Ronda Markley and Kelly Riser and by undergraduate students Bonnie Bernardo and Roberta Kessler.

Landscape as a way to see history

Nearly everywhere we go, history can be read or interpreted in the landscape. Since the earliest settlement, people have been altering their environment in order to make places to live, to work, and to travel. They have built houses, towns, and farms; schools and churches; roads, bridges, canals, and railroads; mines and quarries; mills and factories; stores and warehouses. What people built at a particular time, its use, the materials of which it was built, and its style or form are not at all random - rather, everything that was built in the landscape was built for a specific reason.

Cultural geographer Peirce Lewis refers to a landscape as having its own peculiar form because it is dominated by certain kinds of people who make their living in a particular kind of way, and whose lives are ordered by a particular set of social, economic, and political institutions, each empowered by a particular technology and a particular level of economic wealth. If a particular set of human circumstances remains stable for any length of time, a particular kind of human landscape will emerge, remaining basically stable, changing only in minor details until there is some basic shift in the circumstances that created it. As a shift occurs, there may be a sudden increase in growth and therefore construction of new built forms in the landscape. Conversely such a shift may put a halt to growth so that the existing landscape is frozen in time. A shift in the circumstances that influence the landscape may also result in a change in the kinds of things that are built or in the style of their construction.

All of the built forms in the landscape therefore, are artifacts of a particular time or era. They are part of the story of that era: the people; their lives; the social, economic, and political institutions that they lived within; their level of technology; and their level of wealth. As time goes on and circumstances change, each shift produces a new set of artifacts. This layering of eras of artifacts in the landscape, one era upon another, is often compared to a palimpsest - the ancient vellum documents that were written on and erased repeatedly. When

the writing was erased, it was never eradicated completely and could be read through the more recent writing. These documents were the source for the recovery of many literary works of classical antiquity. Like a palimpsest, the landscape is a kind of historical document - one that contains the artifacts of everyday life. Part of the story will be purely local, but much of the story will be the local expression of broader themes. Through the artifacts in the landscape therefore, it is possible to interpret not only local history, but also the history of America and the world.

The history written into the landscape should be seen as a component of history in its broadest sense. The landscape contains a grand collection of historical artifacts, but only the larger ones. Smaller artifacts, tools for instance, must be housed in museums. Likewise, the names of the particular people who lived out their lives in the landscape, and the stories of their lives are, by necessity, the subject of history books, films, and oral histories. Great and memorable events that left no permanent mark on the landscape must be remembered in memorials as well as books and films.

The physical landscape and the human response

This Corridor is a slice across the landscape that covers a great diversity of geology and landform. The land has always presented people with both opportunities and obstacles to which they have responded in a variety of ways. The land provides opportunities for routes of travel, soil for agriculture, and mineral resources for construction materials and industry. The obstacles come most often in the form of inhospitable terrain or simply the absence of adequate soil and mineral resources to support growth.

What makes this slice of the landscape particularly interesting from a geological point of view is that it cuts "across the grain" revealing hundreds of millions of years of geological history. Along this Corridor, there is very little repetition in rock type and landform so that there is literally something new around each bend. This diversity is seen in the geology, the landform and therefore the scenery, and in the character of the human settlement that resulted from peoples' interaction with the land. Along this route there are five of Pennsylvania's seven landform regions - the Coastal Plain, the Piedmont, the

Triassic-Jurassic Lowland, the Reading Prong, and the Ridge and Valley. One of the remaining two, the Allegheny Plateaus, is not far away at the northern end of the corridor.

The geological history of the region includes at least the past six hundred million years. The oldest of these rocks, possibly as much as a thousand million years old, are found within the Reading Prong. The oldest of the rocks within the Corridor are Precambrian - possibly more than a thousand million years old. Throughout the last five hundred million years, this region has been subject to a series of mountain building events, or orogenies, all connected with the eventual collision of North America with the continent of Africa. These orogenies alternated with periods in which the land was covered by shallow seas - perfect environments for the formation of carbonate rock (limestone). Later, muddy sediments covered parts of the region - the material from which shale formed. Sand, eroded off the early mountains, was also deposited in layers that later became sandstone. About three hundred million years ago, vast swamps covered the region in which plant materials grew and accumulated in thick deposits which eventually became coal. Finally about two hundred million years ago, the collision of North America and Africa forced these flat-lying layers of sedimentary rock into great arching folds. This process subjected the rock to high temperature and pressure, transforming it to metamorphic rock. Shale turned to slate and bituminous coal turned to anthracite. These great folded mountains have since eroded to form todays Ridge and Valley region.

Eventually the earth's crust began to pull apart as North America and Africa began to move toward their present positions. The result was block faulting and the introduction of intrusive igneous rock in the Triassic - Jurassic Lowlands. Throughout the last one hundred million years continued erosion of the Ridge and Valley region and the Piedmont has become the source of the sediments of the coastal plain.

The great continental ice sheets or glaciers were the most recent major event to have an impact on the landform of the corridor. In the last five hundred thousand years at least two glacial advances have touched the region. The Corridor is located at the very southern edge of these glacial advances and the influence can be seen in two ways. The first is the deposition of glacial till in scattered areas throughout Carbon, Lehigh, and Northampton Counties. For example, near

Palmerton unsorted glacial till can be seen clearly in road cuts. These deposits help to tell the geological story but have otherwise had little effect upon the Corridor. The other effect of glaciation has had a wide ranging cultural impact. During glaciation, much of the earth's water was locked up in ice and therefore, the sea level was hundreds of feet lower than it is today. As a result, a few rivers on the east coast of North America cut long, deep, and wide valleys through the coastal plane on their way to the ocean. After the glacier melted, sea level again rose and flooded these river valleys. The resultant bays and estuaries provided excellent passage for ocean-going ships all the way to the fall line. These fall line locations provided very good conditions for the establishment and growth of cities--the falls for power, a large supply of fresh water, and a protected harbor. These conditions were repeated in a handful of locations along the east coast, but nowhere can this situation be seen better than at Philadelphia. Without continental glaciation, Philadelphia would not have been built, and the Corridor story would be a very different one indeed.

The geographic opportunities and obstacles that people have encountered have guided their choices and shaped the patterns of settlement throughout the region. Philadelphia, the center and starting point of settlement in Pennsylvania, owes its existence to the Delaware River and Bay. The Coastal Plain, the Piedmont, and the Triassic - Jurassic Lowland provided many of the necessary opportunities for a developing settlement, such as good agricultural soils, and rock for building construction. The Reading Prong provided local industries with a variety of minerals such as those used for pigments. The Lehigh Valley, a local portion of the Great Valley which is the first valley of the Ridge and Valley Region, contains a band of rich agricultural soil. Here, unlike the Great Valley to the southwest, there are also a bands of slate and cement rock. At the northern edge of the Lehigh Valley is the Blue Mountain - the first significant barrier to northward movement. This ridge, and all of the ridges of the Ridge and Valley Region are formed by layers of resistant sandstone that erode more slowly than the limestones and shale that form the valleys. But the Lehigh River (like the Delaware) has, over several million years, cut down through this mountain and opened a passage to the north. Not many of these passages exist and each one is significant as a conduit for settlement and commerce.

The land to the north however, is not very hospitable. Here, there are fewer opportunities for agriculture, and with the Lehigh River becoming increasingly entrenched to the north, fewer good transportation routes. The land however, had its own resources. The mountains were covered with stands of old growth timber that could be burned as charcoal or wood fuel or sent down river to support the growing settlement to the south. But it was anthracite that was to be the most important resource of this region. Hidden away in deep synclines atop rugged mountains, the anthracite was difficult to transport over inhospitable terrain. Obstacles were overcome though, and the upper Lehigh was turned into a conduit to transport anthracite to the south.

Eras of change in the corridor

The land provides opportunities and obstacles through landforms and resources. People respond to these opportunities and obstacles but also bring along with them social and economic systems, political institutions, a particular level of technology, and a certain level of economic wealth. As these people interact with the land, a landscape emerges. As people change (their systems, institutions, technology, and their wealth), so do their landscapes. The following is an outline of the broad eras of landscape change in the Corridor and in eastern Pennsylvania in general.

Pre-1600: Native American Settlement:

Several thousand years of Native American settlement occurred along the Lehigh/Delaware Corridor, with many layers of settlement history occurring in particular fertile or strategic locations. Hunting/gathering and shifting agriculture. Virtually nothing remains of this landscape, except as revealed in archaeological digs and a handful of Europeanized Indian names.

1600 - 1682

Settlement of the Delaware estuary shores by a small number of northwest Europeans, mainly Swedes, Dutch, and French Huguenots. Almost nothing remains of this landscape except place--names and (perhaps) a very few isolated buildings: e.g.,

Swedesboro (N.J.), Schuylkill. There are no buildings or place names actually located in the Corridor.

1682-1780:

Founding of Philadelphia and initial settlement of the Piedmont. During this period, Philadelphia quickly becomes the biggest city in British North America, and one of the most influential; nevertheless, it remains a small town by contemporary standards. The world has not yet become urbanized--least of all the trans-Atlantic fringe of a colonial empire. The landscape, however, has seen major transformations from wilderness to cleared agricultural fields. And while the economy of Penn's Pennsylvania is overwhelmingly agricultural, Pennsylvania farmers are not subsistence peasants. They make their living from the land, but they are also sellers of agricultural products--the narrow cutting edge of agriculture as business. Thus, the landscape is dominated by small yeoman farms and a large number of small but growing settlements, linked by a thickening network of poor roads. Above the fall line on the Delaware River, the potential for water power lead to the development of a series of mills and mill villages.

There is also a substantial sprinkling of small iron-smelting establishments, using small local iron deposits and locally-made charcoal. These establishments form the basis for what will later become Pennsylvania's heavy metal industry. The effect of activity on the landscape is dramatic, with forest areas cleared for charcoal making, mined areas, and plantation-like furnace centers.

The initial settlers are almost entirely British: English, Welsh, and Scots-Irish. Starting around 1740, German Protestants settle in the frontier territory inland from the British, forming a belt of Germans along the line from Easton, to Bethlehem/Allentown, Reading, Lancaster, and York.

The remains of this Anglo-German colonial landscape can be seen everywhere, revealed in the following:

The basic land-division system: Penn's famous grid-pattern is the basic pattern which guides the growth of Philadelphia and most other ambitious cities and towns. In the country, land is divided by the transplanted English rural system of metes and bounds, with occasional interposition of a primordial grid.

Many small settlements are laid out with a Scots-Irish "diamond" as their central square.

Towns: Very little of the urban fabric is left from this period, largely because it is developed mainly near Philadelphia, where it was later overrun by metropolitan sprawl.

Architecture: The oldest surviving houses are either British (Georgian or I-Houses) or German (I-like houses). The Georgian house typically has four rooms on the first floor and four on the second, rooms facing a central corridor, and a centered front door. The I-House, on the other hand, also has a centered front door but has only two rooms on the first floor and two on the second with no central corridor. From the front, these houses can appear similar but from a use and a status point of view, they are very different. Barns are German, with cantilevered forebays and often quite large, reflecting the need to store agricultural surpluses, not only for farm use but for trade as well. During this era, because transportation depended heavily on water routes, settlement was limited in the area north of the falls of Delaware.

c. 1780 - c. 1850: the maturing small-scale landscape of farms, towns, and elementary industry.

Two things are happening during this time, both important in producing a new landscape morphology.

Growth and maturation of the previous landscape elements.

Cities and towns: SE Pennsylvania contains a well-developed hierarchy of cities, towns, villages, and hamlets. By present-day standards, all (even Philadelphia) still are small pedestrian towns with low building profiles and mixed morphology. Philadelphia is the "primate city," but a number of small cities have emerged: for example, the low-profile downtown areas of Easton and Bethlehem, still can be seen from this period. Architecture is overwhelmingly Federal. The agricultural countryside is dotted with small market towns and villages, all hooked together by an intricate system of improving rural roads. The cores of most villages, and small towns retain some landscape fabric from this period, although rarely is such a fabric untouched by subsequent development.

Agriculture: Nearly all land is brought under cultivation (with the conspicuous exception of areas in steep slope, immediately adjacent to rivers and streams). Pennsylvania by 1850 is the

most productive farmland in eastern North America--and remains so today. Forests are almost all gone, the result of field clearing and charcoal burning. Much of this landscape still exists to be seen today, although it is important to note that the crop combinations are much simpler today than in the nineteenth century.

Industry: Iron-smelting is located all over SE Pennsylvania. Although still small by absolute standards, iron-making is the basis of considerable wealth. It will soon become bigger. Most wooden structures (i.e., almost all houses and much industrial infrastructure) have disappeared.

Mines and Canals

Anthracite (hard coal) mining begins. This is very important; anthracite is the first major mineral to be exploited in English-speaking North America. It begins small, provoked at first by the War of 1812 blockade of British coal. Markets are exploding, however. Although it is used in smelting iron, its main use is home-heating especially in the growing cities of the eastern seaboard and Midwest. The main obstacle to exploitation is transportation, solved by the building first of canals, then of railroads. Entrepreneurs Hazard and White provide dramatic examples of the American spirit of capitalism which radically change a landscape. Canal construction on the upper Lehigh is an engineering and technical achievement of a high order, that makes new cultural landscape in Pennsylvania.

Canals. Before the development of a railroad system, canals totally dominate heavy-duty commercial and industrial haulage. From about 1810 to about 1860, therefore, location on a canal guarantees economic prosperity, which can be seen quite visibly in the cities and towns along the course of the Lehigh Navigation and Delaware Canal systems--especially in cities like Bethlehem and Easton, and in many other smaller places, especially junction or locking places like Mauch Chunk. Clusters of individual facilities along the canal in Easton mark an early appearance of the "industrial park," a form of cultural landscape to become characteristic of the corridor and of the nation. It also permits, for the first time, large-scale exploitation of anthracite--although large scale exploitation will wait for the railroads--presently to arrive.

c. 1850 - c. 1920: the explosion of industrial America.

Everything seems to happen at once, converging to produce an explosion of technology, population, economy, and wealth. The landscape is transformed. The key to it all is the railroad. Much of the ordinary Pennsylvania landscape dates from this period.

Railroads: Unlike canals, which are limited to low-gradient routes near existing water-courses, railroads can go almost anywhere. There is close corporate linkage between anthracite mining and the railroad companies, which own and operate much of the anthracite territory. As anthracite comes to dominate home-heating in the exploding cities of the trans-Appalachian West, exploitation of the anthracite fields becomes enormously profitable and enormously rapacious. If coal can be mined, it is mined, and there begins a century of environmental plunder, which leaves the anthracite fields a wasteland of pits and culm banks.

Numerous bombastic bridges (built for eternity out of stone or brick), and, of course, very flamboyant railroad stations--the ceremonial entrances to the 19th C. town and a very self-conscious stylistic emblem of a town's identity are built during this period.

Immigration: The demand for labor in the mines and factories is unprecedented, and is satisfied by unprecedented means. Labor is recruited from poor parts of Europe--first from Ireland in western Europe, then as the century progresses, farther eastward and southward to the fringes of Russia and the Mediterranean. The Mediterranean countries included Italy and the Slavic borderlands: Lithuania, Poland, Bohemia, Slovenia, Hungary, Ruthenia, and the Ukraine. These people are housed in dormitories and company houses, built by the thousands, usually in rows of identical houses in small towns and "patches" at or near the diggings. Ethnicity is evident by the proliferation of churches with crosses and onion domes, and a large number of ethnic cemeteries.

Industry: The combination of cheap fuel, rail transport, and labor, combines with insatiable demands for industrial goods to convert cities of modest size into booming industrial cities. The railroad tracks in such cities are lined with industrial plants, often metal-working--a corridor and Pennsylvania specialty. Philadelphia is the biggest and set the pace, but lesser

cities along the Delaware and Lehigh share the experience, especially those with mainline railroads. Towns like Bethlehem and Allentown become major industrial cities. All attract large numbers of eastern and southern European workers. Row houses are built in huge numbers. Some are watered-down styleless boxes (whose form is vaguely Georgian); others are the latest Gothic Revival, or Italianate, or Romanesque, or Queen Anne styles. Downtowns begin to sprout high-rise buildings in the center of town, often with highly characteristic Beaux-Arts and Chicago styles. Centers of cities become increasingly congested and railroads combine with factories to pollute the urban air with the result that the upper and upper-middle classes migrate to newly-built suburbs, accessible by streetcars and electric railroads. The industrial and downtown commercial profiles of Bethlehem and Allentown date in large part from this period.

Note: These are often flamboyant landscapes, and serve as tangible testimony to Pennsylvania's enormous industrial muscle in the years between the Civil War and the Depression.

c. 1920 - c. 1965: Apogee and decline:

The relatively stable industrial morphology of the late 19th C. landscape begins to unravel, and a new order of landscape begins to emerge. There are several causes. Some are operating at a national scale; some are peculiar to eastern Pennsylvania.

The Great Depression. The crash affected most of the world, but most excruciatingly in the complex industrialized areas around the North Atlantic Basin. Much of the Delaware-Lehigh Corridor's heavy industrial establishment failed to recover. The reasons were institutional: changes were occurring to undermine the health of the industrial order.

Arrival of the automobile in democratic numbers. As a result, there is a slowing of growth in the centers of cities which the railroads had made prosperous. Automobile suburbs begin to invade the rural edges of cities and towns, slowly until the end of World War II, after that explosively. Limited access highways supports a trucking industry which, by the end of World War II, has begun to undermine the hegemony of railroads.

Industrial competition from new areas. Heavy metal-working industries along the edge of the North Atlantic Ocean had

enjoyed a near monopoly in the world metals and machinery market for almost a century. By 1950, and post-World War II recovery, that is no longer true. The failure of American capitalists to modernize their industrial plants make places like Bethlehem increasingly obsolete. Both World War I and World War II give such places an artificial shot in the economic arm, but the effects of the shots are wearing off by the 1950s. By the 1960s, all of the old smokestack industries of the eastern US are in serious decline and creating landscapes of abandonment.

Collapse of demand for anthracite. Up to the mid-1930s, anthracite is the fuel of choice to heat America's domestic dwellings--and Pennsylvania possesses most of the North America's anthracite deposits. (By now, it is obvious that anthracite is inferior to bituminous in steelmaking; the anthracite market, consequently, is almost totally domestic).

Oil and gas from the mid-continent, however, begin to make inroads into the domestic heating market and, during World War II, long-distance pipelines bring Texas oil and gas into the Northeast. The anthracite market collapses, never to recover.

Change in mining technology. Up to the early twentieth century. most anthracite has been mined by underground shaft methods--a highly labor-intensive enterprise. Toward the end of World War II, the development of huge new digging machinery makes it possible to remove overburden and to mine anthracite by stripping the surface. Headworks are idled, and thousands of miners are thrown out of work. A mass exodus results and most mining towns suffer huge losses in population. Many smaller patches and villages are abandoned totally leaving a region with many decaying settlements. By the 1980s, less than one percent of the anthracite valley's workforce actually works in mining. Strip mines use little labor, but make even more dramatic changes in the landscape as vast mountaintops and plateaus are turned upside down. Absence of reclamation laws result in nearly universal abandonment of stripped areas, leaving huge scars on the landscape still visible today.

The new post-industrial order: c. 1965 and after:

Three elements lie at the base of a new post-industrial landscape along the Delaware and Lehigh Corridor.

A new economic base. Like the rest of America, the corridor's main prosperity depends not on the manufacture of heavy industrial objects like girders and steel cable, but instead by one of two activities: (a) the manufacture of high-tech objects like computer chips or consumer-oriented products like toiletries, and (b) the provision of services: banking, insurance, printing, and communications.

The growth of Megalopolis. This is perhaps the single most formidable instrument of change in the corridor. What happened is simple to describe, but infinitely complicated in detail: the heavily urbanized zone which stretches from Boston to Washington (BOSWASH) has expanded inland to the point where isolated country like eastern Pennsylvania is now becoming part of a massive urban system. This landscape has become known as "Megalopolis" but almost none of it is associated with old agriculture or old cities and towns. These old places often are used as stage-sets and "historically" restored or preserved. Just as often, however, new industry and new towns are springing up in heretofore rural neighborhoods. This is genuinely a new landscape from a new world, and it is under construction even now.

The growth of recreation and tourism. Several forms of recreation have taken root in landscapes previously dominated by industry. As the devastated industrial landscape has healed, several sections of the Lehigh River are nationally known for striking natural features, scenery, and white water. Many thousands of recreationists flock to this region for boating, hiking, hunting, biking, skiing, and sightseeing. Second homes have replaced many mining villages. In the southern sections of the corridor, tourism has become a major activity and an economic force. Well preserved landscapes that characterize early settlement history are one of the major attractions. Thousands of recreationists ride tubes down the Delaware each summer weekend.

The landscapes of the Corridor

Since the first settlement within the Corridor, there has been an almost continuous development of places - each one with its own reason for being and therefore with its own distinctive form. In many ways these landscapes are very different from one another, each responding to circumstances that vary

greatly in time, in technology, in social conditions, and in economic situation. One thing that does tie all of these landscapes together however, is that they portray a profound change in America. This Corridor has seen America transform through three hundred years of development from an agrarian society to a world industrial power. This is a story that can be told in many places, but this may be the best and most complete place to tell the story.

New England may contain outstanding colonial villages, or industrial districts of certain types, or emerging contemporary suburbs. The south has its own forms of industrial landscapes, agricultural patterns, and characteristic village and town landscapes. The argument can be made, however, for the distinction of the Corridor in its inclusion of so many visible cultural landscapes from so many eras. From the variety of colonial landscapes, to the early industrial landscapes, to the mining, transportation, and industrial landscapes illustrating America's leap to the major industrial power of the world, to the emerging landscapes of megalopolis, the automobile and recreation, the Corridor not only includes examples, but includes outstanding easily observed examples. Finally, the arrangement of these landscapes along a recognizable corridor--a river corridor with an intact transportation system--contributes overwhelmingly to the possibilities for revealing to observers the transformation of the American landscape.

Certain chapters of the transformation are particularly distinctive and are summarized as follows:

The colonial agricultural landscapes of Bucks County that have roots extending back to the founding of Pennsylvania.

In places these landscapes have a fabric that has changed very little over the last two hundred years. Many of the artifacts, such as the houses, schools, churches, barns, field patterns, and roads, evoke a sense of the past (especially of the eighteenth century) that can be had in few places in America.

The colonial landscapes of Northampton and Lehigh Counties.

These landscapes include the landscapes of the Moravians, and the eighteenth century settlements of Easton, Bethlehem, and Allentown. The agricultural landscape of the Lehigh Valley was also established at this time.

The Agricultural Landscape.

Agriculture was one of the earliest land uses to take a lasting form in the landscape throughout the Corridor. The Lehigh Valley contains extensive areas of prime agricultural land that have been in continuous production from the eighteenth century to the present. Bucks County also contains many areas of prime farmland, though the areas are not as extensive as in the Lehigh Valley.

The most productive areas of this agricultural landscape have been continually updated to reflect the latest technology and, therefore, have the forms and patterns of contemporary agriculture. However, much of the farmland that is not as productive has not been fully "modernized," and continues to reflect the forms and patterns of various past eras.

The Landscapes of the Mining, Transport, and Use of Anthracite

It was for the transport of anthracite that the canal was conceived and constructed, and it was for the transport of anthracite that it continued in operation long after the "canal era" was over. Other goods and materials were carried on the canal, but anthracite was by far the most important freight. A corridor for the transport of anthracite did not exist before the first ark loads of coal were transported on the river in approximately 1814. Construction of the wing dams in 1818, and the bear trap locks in 1819-20 mark the true beginning of serious effort to transport anthracite on the river. By 1827, once a market for anthracite had become well established and construction of locks and canal was begun, this route was firmly established as a corridor. Different sections have different starting dates depending on when transport was begun in that area.

This corridor was one of several routes for transporting anthracite to market. Some routes were limited to canal traffic, some combined canal and railroad, other routes were railroad routes only. Each of the routes played a role in the industrial development of America, and each of the routes left its mark on the landscapes through which it passed. These major routes can be defined, more or less, as having a "coal shed" or a territory from which coal was mined and transported along branch lines until finally reaching a major collector route. This analogy to a water shed is somewhat crude but it does provide a way of seeing the major routes of anthracite as being

integrally connected to the source of the coal itself. From early in the nineteenth century to well into the twentieth century, the mining of anthracite, its transport, and its use were important driving forces behind many of the landscapes of the Corridor. The extraction of anthracite produced a landscape of mining towns throughout the anthracite region of Carbon and Luzerne Counties. The transport of anthracite to market was the most important factor in the construction of canals and the canal towns along them. Later railroads took over the primary role of transporting anthracite and stimulated the growth of a new set of towns and landscapes. Finally, anthracite was used by industries throughout the Corridor. These industries were themselves the source of a significant amount of urban growth, especially in the Lehigh Valley. Anthracite, while a resource that only occurred in the northern part of the Corridor, had a significant influence on a wide range of landscapes throughout the Corridor.

The Landscape of Industry and Transportation

Almost everything that made the United States a major industrial power is found here. Mining itself is an industry, of course, and the scale and concentration of coal mining is significant in this Corridor. Other mining has included a diverse arrangement of cement extraction in the Lehigh Valley near Coplay and the quarrying of state near Slatington. Manufacturing industries are present in all varieties and stages of activity, from early rudimentary iron furnaces long inactive but still visible, to heavy steel mills still producing, to a now defunct processing plant for zinc of astonishing proportion and devastation, to modern, high-tech plants along highway interchanges.

The transportation system that has evolved since the canals to support industry is well revealed in the corridor landscape. Early turnpikes are present as well as modern limited access highways. Railroads of distinctive scale and distribution are visible in both historic and contemporary cultural landscapes.

Urbanism which resulted from the growth in industry is present in a wide variety of forms, from tiny mining patches like Eckley to medium sized cities like Allentown. The impact on the landscape of pre-industrial urbanism is visible in locations such as Bethlehem where the early Moravian settlement is intact but overwhelmed in scale by heavy industrial urbanity.

The effects of industrialization are visible in cultural landscapes defined by ethnic diversity resulting from massive immigration. The northern half of the Corridor is dotted with housing built for workers in adjacent factories. Connection to this era of immigration is visible in the considerable variety of churches that dominate these neighborhoods.

The extent, variety, connectedness, and visibility of these industrial landscapes is distinctive and possibly unique.

The landscapes of metropolitan Philadelphia

Influenced by the growth pressure beginning in the nineteenth century exerted by the Philadelphia area, the lower portion of the study area has experienced a good deal of urban development. Such places as Bristol, Levittown, Morrisville, and much of the landscape in between are examples of such development. Levittown, in fact, is a landmark of some distinction as the prototype for American suburban residential development. Philadelphia has become part of a corridor of transportation and utilities passing from Boston to Washington through New York.

The Contemporary Landscape

Not all of the cultural expressions in the landscape are historic. Many forms have appeared in the cultural landscape in the second half of the twentieth century, such as the "edge city" development that occurs near Allentown along I-78, the recreational landscape, strip commercial development, and the suburban residential subdivision.

The study team concludes that the most distinctive characteristics of the cultural landscapes in the Corridor concern their variety and distribution. A very compelling story in the cultural history of the United States is revealed here. The potential to illustrate the transformation of America through this diverse collection of landscapes is a wonderful challenge.

Background

Before we begin to read, interpret, or otherwise try to make sense of the landscape, it would be helpful to have a working definition of landscape itself. Landscape, as it turns out, is a difficult word to define. The *Random House Dictionary* (2nd edition) defines landscape as "a section or expanse of rural scenery, usually extensive, that can be seen from a single view point" and "a picture representing natural inland or coastal scenery." The idea of landscape as a scene reflects the way that we see the landscape but it does not give us any help in understanding it. This definition fails to consider that the landscape is a dynamic place where people live out their lives and fails to acknowledge urban places as landscapes. Recognizing these shortcomings, cultural geographer J. B. Jackson suggests that landscape could be seen as a "composition of man-made spaces on the land." This definition implies that there are two basic factors at work in the landscape: the land and people. The land provides the setting and the opportunities, the people provide the ideas and the motivation to manipulate the land to better suit their needs.

Cultural landscapes are the products of interaction between people and land. The opportunities or limitations presented by the land have defined the location and nature of man's activities: the availability of water, of agricultural soils, of minerals, or of access and movement. The attitudes and values that different groups of people have brought to the land over time has produced landscape patterns of the widest and most interesting variety.

Cultural geographer Peirce Lewis has described cultural landscapes as "a process of overlay." Landscapes that have been stable for many years will eventually shift in form as the circumstances that created them change. Such shifts can take various forms: the introduction of a new technology (such as a new canal to carry goods to market, or a new way of heating houses)--the creation of new markets (prompted, perhaps by the conquest of new territories, or the rapid growth of urban populations)--the arrival of new immigrants with new skills

and new demands--the replacement of a particular form of transportation by another one (as for example when railroads replaced canals as the prevailing mode of carrying bulk goods).

Such shifts, furthermore, can occur quite abruptly, and if the shift is basic (as the replacement of canals by railroads indeed was), a new morphology of landscape will take form, replacing the old forms. Such replacement, however, is quite uneven. In temporal terms, the change rarely takes place all at once. And in geographic terms, the change rarely affects an entire region or territory. Thus, at any moment, a "contemporary landscape" consists of the present prevailing forms (which have changed most recently), laid beside and on top of older "relict" landscape forms which, while obsolete, still remain static from earlier times--especially in off-center geographical areas, which have been bypassed by the main currents of change.

Landscape Artifacts

The individual artifacts in the human landscape are the structures that people build in the course of living their lives. These artifacts include (listed from obvious to subtle):

Buildings - factories, mills, offices, warehouses, stores, houses, barns, churches, schools, courthouses, etc.

Modes of transportation - roads (including their layout, size, surface, and bridges), canals (including locks, dams, and aqueducts), railroads (including rail beds, bridges, tunnels, and all of the many structures associated with railroads) and Airports. Land division - the division of the land into units of use and ownership and the visible signs of that division including agricultural field patterns, boundary lines between land uses, fence lines, and hedgerows.

Changes in the surface of the land - mines, quarries, dams, cuts, fills, and other land excavations.

Alterations in the communities of plants and animals that live on the land.

Within any given historic period, structures that are built in the landscape have a form that is not at all arbitrary, but rather is in direct response to a variety of influencing factors: the

structure's use or function, the level of technology at that time in that place, the availability of labor and skills, the availability of materials, and the prevailing styles of the time. Each of these factors contributes its own very distinctive characteristics to the form of the structure.

"Reading" the Landscape

If we know how to recognize the characteristic forms of a building or other structure in the landscape, and if we know how to interpret these characteristics, then we can "read" the history of the landscape through these artifacts.

The individual artifacts are the basic components of the human landscape and can be read and interpreted to reveal a great deal of information about the artifact itself. But this is only a portion of the story that can be told by reading the landscape. The artifacts of any one historical period fit together to create groups and patterns. These patterns are the fabric of the human landscape. When we see a piece of the landscape fabric from any given period in history, we are better able to understand the events that occurred there and the lives of the people who lived there, than if we only view the individual artifacts in isolation.

The end of one historic period and the beginning of another is marked by a shift in the circumstances that influence the lives of the people who live there. As a shift occurs in the circumstances that influence the people of a region, new kinds of artifacts in different patterns are overlaid upon the fabric of the landscape of the previous period. The overlay of the landscape of one historic period upon that of a previous landscape is not uniform, however.

In some places there is a (more or less) single historic period represented in the artifacts of the human landscape. These single-period-landscapes can have two different reasons for being. (1) A given place had little human settlement before a single main period of growth and prosperity took place (when structures were built in the landscape.) If this period of growth was followed by a period of stagnation, then the human landscape (i.e. artifacts) were frozen in time and continue to reflect that period. (2) A place may have been first settled in a land use such as agriculture. If agriculture continues to be

viable in that place then the human landscape will reflect the historic period when that land use was established.

In some places the landscape may reflect more than one distinct period of growth and prosperity or land use. In this case, a period of growth may have been followed by a distinct shift in the circumstances that influence the things that people build in the landscape (with or without an intervening period of stagnation) so that when the landscape of the new period is overlain upon the previous one, there is a clear and visible distinction between the two landscapes.

In other places the landscape has gone through several periods of more or less continuous growth and change. The result may be either a continuous alteration of the landscape fabric to suit the current circumstances, or a more additive process in which each period is added to the fabric of the previous landscape in more or less concentric rings. A combination of the two is also possible.

In the above situations, the landscapes that had a single period of prosperity tend to be the most readable since all of the artifacts tend to focus on the same period in the history of the landscape. When the landscape is a mix of various periods, readability will depend upon the size of the pieces into which the fabric is broken - the larger and more intact the piece of the fabric, the more readable it will be. Even when the fabric has been broken into small pieces or the landscape is a mix of artifacts of many different periods, it is still possible to read the story of the landscape, but it requires a great deal more interpretation in order for it to be understood by the inexperienced landscape observer.

The readability of the landscape fabric or the extent to which the fabric is representative of its particular period tends to deteriorate over time. This occurs because the individual artifacts that make up the fabric tend to deteriorate or change. Individual artifacts change for a variety of reasons: some artifacts go out of use and are abandoned leading them to be demolished or to become ruins, others change use and are remodeled or otherwise altered to obscure their original form.

The final readability or imagability of any particular piece of landscape fabric is a function of the following variables:

1) Whether the landscape fabric represents a single period, multiple periods, or is a mixture of many periods.

2) The size of the remnants of landscape fabric that represent a given period.

3) The extent to which the individual artifacts within the landscape are intact and able to be read.

Cultural Landscapes as a Basis for Planning and Design

In order to use cultural landscapes as a basis for planning and design, further definition is required. Cultural landscapes need to be differentiated one from the other in order to clarify their relationship to planning objectives. Cultural landscapes can be characterized by such factors as historical era, land use type, scarcity, or pattern components.

Extensive investigation of cultural landscapes has been undertaken by cultural geographers, including David Lowenthal, J. B. Jackson, Peirce Lewis, Wilbur Zelinsky, and John Stilgoe. Their efforts have provided insightful and eye-opening descriptions of the American scene, and of how we may observe and understand it. In general, however, these descriptions and methods of observation are not directed to the application of cultural landscapes in a regional planning context.

The integration of cultural landscapes into planning and design appears to be primarily associated with historic landscapes, rural historic districts, or rural landscape preservation. These activities have focused on the identification and preservation of rural landscapes or districts which exhibit special qualities or values. In some cases, these efforts may be compared to extending the methods and concerns for historic preservation of buildings and neighborhoods into the landscape beyond. Fine examples of such applications include projects by William Tishler and Alan Stovall where valued rural landscapes assume a position of equal importance to historic buildings.

Cultural landscapes have been the object of considerable effort by the National Park Service. These efforts have primarily addressed the preservation or renovation of particular cultural landscapes, usually those that are contained in existing Park Service lands, or that will be purchased and managed as historic sites or parks. Outstanding research defining methods

of identification, evaluation, and management of rural historic districts in the National Park System has been done by Robert Melnick. These methods are not directly and totally applicable to cultural landscapes that will never be in a park, include urban districts, and are intended primarily for observation and interpretation, rather than restoration. The cultural landscapes of the Corridor are not static collections of historical artifacts, but dynamic, changing human settings that often reflect several layers of history, including the artifacts of the present day. These landscapes will never be controlled to a degree that total restoration consistent with a specific era would be feasible or desirable. Rather, preservation of important components of "living" cultural landscapes can allow observers to "read" earlier eras of human history. Certain aspects of Melnicks criteria for the identification and evaluation of rural historic districts are appropriate to the identification, description and evaluation of cultural landscapes in the Corridor. Categories of historical and cultural context, and some rural landscape components defined by Melnick have application to the description of Corridor landscapes. Criteria for evaluation of importance of rural landscapes, as related to National Register criteria by Melnick, do have direct application to the National Heritage Corridor.

Assumptions

The cultural landscapes inventory study team believes that the integration of cultural landscapes in the Delaware and Lehigh National Heritage Corridor project may require additional assumptions about their importance, identification, and relationship to the planning and implementation process in order to clarify the intentions and directions of the project. Lacking a universally accepted classification system for cultural landscapes, the study team will propose a system of values and methods that apply to the needs of the National Heritage Corridor.

The National Heritage Corridor will not be a national park.

While particular small land areas may be acquired and certain interpretive facilities may be placed in the Corridor, a traditional park will not be created. And while extensive public lands do exist in the Corridor, the vast majority of land

will remain in the private domain. Existing National Park Service methods and techniques for landscape preservation and restoration will, in general, not be applicable in the Corridor, because the National Park Service will not own the land. The methods will have some application for the analysis and evaluation of cultural landscapes.

The cultural landscapes in the Corridor are constantly evolving.

Because most of the Corridor is privately owned, the landscape is continuing to evolve as people and economies change. Some locations are evolving quite rapidly, while others appear to be stable. However, none are static--even many of those landscapes on public lands, where vigorous vegetation gradually obscures and deteriorates many artifacts and patterns of artifacts. This extensive living corridor has seen dramatic changes, and certain sections will be quite different several decades from now. These changes are not necessarily undesirable, and will provide a measure of interest and vitality to the continuing interpretation of cultural landscapes.

One reason to identify cultural landscapes is to protect them.

While the entire landscape is evolving, certain valued cultural landscapes may be worthy of measures to protect against their destruction. Although the Corridor is not a national park, with its associated potentials for protection, there are various other measures for preserving cultural landscapes, including enhancing awareness, local or regional acquisition, and application of creative land use controls. Relative to the entire Corridor, few landscape elements can receive full protection, while different levels of protective management can adapt others to sympathetic integration with evolving patterns. Protecting entire cultural landscapes from change is even less likely.

A second reason to identify cultural landscapes is so that people can observe them and learn from them.

Whether a local resident seeing the landscape in new ways, or a temporary visitor finding a deeper connection to obvious attractions, making cultural landscapes more visible and understandable to people is a major potential of the National Heritage Corridor. Awareness and interpretation of cultural landscapes can enrich our lives, increase our understanding of the places we live or visit, and put our own lives and times in perspective. Observation of cultural landscapes can be a

natural occurrence in daily activities, rather than a special destination. Relative to the entire Corridor, many landscapes offer dramatic potentials for enhancement of identity and interpretive context.

The whole Corridor is a cultural landscape, but some locations have more value than others.

The entire inhabited landscape can be called a cultural landscape. Elements of human habitation can be read everywhere, and even obscure histories can be read by skilled observers. Some cultural landscapes have more value today than others, and how these values are assigned is an important question of the entire corridor study and implementation strategy. Efforts to make cultural landscapes observable and understandable to people depends on some classification of the whole cultural landscape into more important parts. Value may be associated with legibility, scarcity, connection to an important era, or connection to other landscapes. Value should not be limited to the wealthy or prominent makers of a cultural landscape, nor limited to historical rather than contemporary landscapes.

Cultural landscapes are not always historic landscapes.

As developed during current planning and design applications, cultural landscapes have in nearly all cases been those valued because of their connection to or remaining pattern elements of a historic landscape. Usually, these are then related to potentials for protection, preservation, or restoration. In a corridor such as the Delaware and Lehigh Canal National Heritage Corridor, where observation and interpretation of cultural landscapes is an important goal, contemporary landscapes may have value either for a logical connection to history or as new, emerging forms. Examples of new forms may include Allentown as an "Edge City" or the upper Lehigh Corridor as a landscape of recreation. Identification and interpretation of contemporary cultural landscapes will be included in the inventory developed by the study team.

Cultural landscapes are better understood as a connected story than as a collection of interesting fragments.

Cultural landscapes, as the portrait of people interacting with land, involve connections. In the same way that a story is more interesting, satisfying, and instructive than a single event or character, a cultural landscape is more than a collection of

buildings, roads, locks, or fields. It is important for observers to know that the interesting building is there because of the town, that the town is there because of the canal, that the canal is there because of the river and the coal, and the coal is there because of a chain of geological events that span 300 million years. The manner by which landscape elements form the fabric of a story is the manner by which cultural landscapes should be identified, evaluated, and interpreted.

All observers are not the same.

Not all observers will approach cultural landscapes with the same level of curiosity, background, or perseverance. Some observers may encounter cultural landscapes incidentally, as a rafter on the Lehigh River who notices a series of stone locks but whose primary interests of the day are elsewhere. A life-long resident of Easton may be aware of certain artifacts by continuous association, but does not read history books or attend workshops. A family on vacation may seek out historic sites and make deliberate attempts to piece events together. A school program might organize a systematic and continuing curriculum for identifying and interpreting cultural history in the landscape. Serious observers of the landscape may enjoy the challenge of complex and difficult research to put together a fairly simple story. Relatively, it is assumed that there are many more casual observers than serious ones. Efforts to engage and assist the whole range of observers should characterize the National Heritage Corridor Project.

The proposed assumptions about the National Heritage Corridor, its cultural landscapes, and the potential observers of these landscapes, attempt to establish a basis for an inventory and assessment of cultural landscapes. The means of developing this inventory includes an understanding of how landscapes may be defined, how they may be described, how they may be valued, and how they may be interpreted.

Description of Cultural Landscapes

Cultural landscapes need to be systematically described in order to clarify their characteristics and also to provide a basis for their assessment. A system of description should be applied consistently to all landscapes being evaluated to facilitate their comparison.

By Type

Cultural landscapes may be defined by the type of land use that characterized the changes on the land. In some cases, a cultural landscape may be composed of a single type, but more often will be composed of a combination of types in more complex arrangement.

1) Landscapes of Transportation: roads, canals, railroads, turnpikes

2) Landscapes of Industry: manufacturing

3) Landscapes of Agriculture

4) Landscapes of Resource Extraction

5) The Landscapes of Urbanism

By Era

Cultural landscapes vary by type, but also by the era which produced them. In most cases, several eras have been superimposed in a process.of overlay. The landscapes of earlier eras may be entirely or partially obscured by succeeding layers, while an earlier era may dominate the visual scene in a cultural landscape where abrupt shift of economy or technology resulted in few later changes.

The significant eras in the National Heritage Corridor have been defined by the study team as follows:

Pre 1600: Native American Settlement

1600 - 1682: Settlement of the Delaware Estuary

1682 - 1780: Founding of Philadelphia and the initial settlement of the Piedmont and Great Valley

1780 - 1850: The Maturing, Small-Scale Landscape of Farms, Towns, and Simple Industry

1850 - 1920: The Industrial Explosion

1920 - The Apogee and Decline of Industry

1965 - The Post-Industrial Order

By Clarity

The degree to which a cultural landscape may be accurately perceived is a measure of its clarity or imageability. Landscapes which exhibit relatively intact components and patterns form a particular era are clearer than those which have fragmented components from many eras. The degree of clarity of a cultural landscape may be a way to measure its significance or value. Also, clarity is closely connected to levels of interpretation by observers. Entry-level observers will require landscapes of clear imageability, while serious observers will not be discouraged by obscurity. This suggested range of clarity will need further refinement and definition.

Imageable - Unified, clear patterns and elements form a vivid image of an era or theme, although other eras may be present. Most elements of landscape fabric important to history and purpose are present.

Fairly Imageable - Patterns and elements are observable, but are less clear, with more conflicting components or themes.

Obscure - Complex fragments from many eras resulting from continuous growth and change form conflicting images that are difficult to connect.

By Composition

Cultural landscapes are composed of various natural and man-made elements. The arrangement and relationships of these elements form patterns which can be defined by a vocabulary of physical form. The form of these compositions is part of the means for defining both the type and clarity of cultural landscapes. These compositions also may become characteristic of certain cultural landscapes, such that particular patterns or arrangements are a means of description, identification, and interpretation. A vocabulary of landscape pattern components developed by landscape architect Kevin Lynch as used by people to construct their mental image of the form of settlements, includes:

Pathways - trails, roads, canals, streets, etc.

Nodes - intersections of pathways

Districts - spaces with similar land use, physical character, or activity

Edges - boundaries between districts

Landmarks - focal elements with physical or cultural importance

Additional form related vocabulary includes:

Landform - the primary geologic and topographic character of a landscape.

Shape - most settled landscapes have a definite shape which may be linear, concentric, rectilinear, or star and may be arranged as satellites in a constellation.

Density - a measure of either the number of inhabitants or the coverage of the land by buildings or built elements.

Texture - the pattern of a landscape will exhibit a grain of fineness or coarseness. Texture can vary from uniform to uneven.

The patterns described with such a vocabulary apply to both natural and built elements, and will serve to characterize overall spatial organization as well as internal spaces. The vocabulary is subject to refinement and addition.

By Importance

Cultural landscapes vary in importance or value. The factors that influence importance are proposed to include:

Scarcity -Cultural landscapes that are rare are more important than those that are common.

Relationship to history- Those landscapes that include distinctive historic associations have more importance than those that have common histories. The degree of distinction may be measured by the importance of historic events associated with a landscape, by the association of people with special historic connections to a landscape, or by the presence of artifacts with exceptional character. These qualities reflect criteria for nomination of sites to the National Register of Historic Places.

Relation to Major Themes - Those landscapes that connect directly to major historical themes of the National Heritage Corridor will have more importance than those that are interesting but isolated events.

Presence of unique artifacts - Those landscapes that include unique or distinctive objects, patterns, or artifacts have more importance than those having common artifacts.

"Special" Certain combinations of physical landscapes - composition, historical context, or social activity may create unique associations recognized by local populations.

Levels of Interpretation

The study team has assumed that a primary purpose for clarifying cultural landscapes in the Corridor is so that they may be observed and interpreted. It has also been assumed that observers will vary in curiosity, background, and perseverance. This suggests that different levels of interpretation should be acknowledged, should be reflected in the identification of cultural landscapes, and should form a basis for implementation programs.

An analogy to landscape interpretation may be made to levels of interpretation of music. At one level, music by Bach is understandable and appreciated by many as beautiful and inspiring. One does not need a serious level of curiosity, background, and perseverance to benefit from Bach. At another level, however, awareness of the particular context of a particular work--such as music composed for a certain religious holiday--can add a significant degree of understanding, appreciation, and inspiration. At yet another level, Bach scholars are aware of complex mathematical relationships in the music that may warrant years of curious or serious study--and that may be rewarded by even greater appreciation. Bach is interpretable at many levels by many sorts of people. The same analogy is not applicable only to classical music, of course. The same point could be made about The Beatles being interpretable at both casual and serious levels.

The second part of the analogy is critical. While Bach and The Beatles may be interpreted at many levels, some music does

not allow this freedom. Much popular music supports only the most superficial interpretation. Bartok, on the other hand, requires a listener with considerable curiosity, background, and perseverance. Few listeners find Bartok engaging at an entry level.

Interpretation of cultural landscape in the Corridor should be accessible at all levels. Entry level observers should be rewarded with clear, understandable images and relationships. Observers who inquire and persevere should be able to find a richness of meaning in the landscape. Attempts to engage the attention of entry level observers should utilize cultural landscapes that are imageable, clear, and representative of easily perceived themes or eras. Cultural landscapes of increased complexity, obscurity, and detail are logical extensions for the curious, persevering observer.

Within the National Heritage Corridor, cultural landscapes vary widely in clarity and complexity. It is proposed by the study team that the classification of cultural landscapes recognize levels of interpretation by observers, as one means of differentiation. It is also suggested that levels of interpretation may form a logical basis for aspects of an eventual concept of interpretive programs.

Classification by Levels of Observation and Interpretation

The description of cultural landscapes by type, era, clarity, composition, and importance provides a means for their identification and interpretation. Consideration of cultural landscapes for observation and interpretation by the public adds another means for differentiation. The study team has assumed that observers are not all the same and that the cultural landscape varies widely in ease of observation and interpretation. Classification of the cultural landscape by levels of interpretation is proposed by the study team as a logical extension of those assumptions that can connect the landscape with its observers.

Levels of Potential for Observation and Interpretation

Level I - Greatest potential to be observed and interpreted Those landscapes that are high in clarity and importance, with distinct compositions and connections to a theme.

Level II - Moderate potential to be observed and interpreted Those landscapes that are less imageable and important, with less distinct compositions and connections to a theme.

Level III - Least potential to be observed and interpreted The entire remaining landscape of the Corridor.

In the classification system as proposed, the Level I and II landscapes will be identified and described by type, clarity, composition, and importance. Refinement of the actual criteria for application and combination of these factors will be developed during the inventory process. The results of the classification may be applied to an interpretive program or strategy for the Corridor which recognizes levels of interpretation as an organizing element.

Definition of Study Corridor

Background

The inventory and analysis of the National Heritage Corridor depends upon a definition of the extent of this "Corridor." North to south, the limits of the Corridor have been established with some clarity. The width of the study area, however, is a much more elusive boundary to define. An arbitrary limit risks the elimination of desirable or even crucial elements that contribute to the national heritage story. Following is a point of view and method for establishment of a study area boundary of the National Heritage Corridor Cultural Landscapes Inventory.

Assumptions

Major Themes Define a Study Area

The overview has proposed that the transformation of the American landscape is the dominant theme that unites the entire study area. This connecting fabric of transformation forms the most convincing logic for defining a study area. Several major themes that clearly express this transformation are described in the Overview, and those landscapes that reveal these themes should form the basis for defining the edges of a study area.

The study area does not have a fixed width.

The edge of the study area should be defined by the cultural landscapes that are present. In most locations, this edge will flex with the defining elements of the landscape. For example, the landscape dominated by the mining, transport, or use of anthracite is wider to the north, and narrows toward the south, becoming a narrow band along the Delaware River. The landscapes that adjoin those dominated by anthracite are wider to the north. In general, to the south the landscape was developed for human use, and a landscape fabric was well established prior to the beginning of anthracite transport; to the

north, very little human use of the landscape occurred prior to the mining of anthracite, and few new uses have occurred.

The edge of the study area is a dotted line.

During the stages of inventory and analysis, the definition of the edge of the study area flexed to accommodate new information, new interpretations, or revised judgments. The study team is not certain as to the eventual necessity of a Corridor with an edge which is a solid line--where, for example one side of a road is "in," and the other is "out" of the National Heritage Corridor, with its various programs and benefits.

Study Area Definition

Recognizing the transformation of the American landscape as the primary connecting fabric of the study area, a proposal for its definition is organized. Landscapes that illustrate the major themes of this transformation will be defined, connected, and a study area edge selected. Landscapes that express several of these major themes are listed here.

1) Landscapes of Colonial Settlement and Agriculture

2) Landscapes of Mining and Transportation

3) Landscapes of Industry

4) Landscapes of Urbanism

Method

1) The boundaries of the study area were drawn in logical response to the edges of districts of cultural landscapes so included. The study area varies in width, as appropriate, to include the necessary components of the themes of the transformation of the American landscape.

2) When the landscape under consideration extended indefinitely without a distinct edge, such as a continuous agricultural landscape that varies little as distance increases from the river, an appropriate boundary was selected by the study team. This edge may utilize topography, roads, or other logical boundary.

Background

The chapter "Definition of Cultural Landscapes" explains the means by which cultural landscapes may be defined and described. This chapter also proposed a method for classification of cultural landscapes by levels of interpretation. The inventory of landscapes within the study area began with these definitions to identify and rate the significance of individual and collective cultural landscapes.

Although previous discussions have defined cultural landscapes and their relationship to potential interpretation, additional criteria are needed to identify particular cultural landscapes, choose their boundaries, and distinguish the distinctive from the common. Criteria for identification and evaluation of rural historic districts developed by Robert Melnick for national parks were only considered partially applicable because of the differences between parklands or rural historic districts and dynamic, changing, living urban landscapes. The larger scale of cultural landscapes in the Corridor also requires additional identification criteria. The following is a summary of the criteria for formation and identification of cultural landscapes, of the techniques used to apply these criteria to the study area, and of the basis for rating the value of the landscapes so identified.

Identification of Cultural Landscapes: Requirements

Presence of Fabric

As described in the "Definition of Cultural Landscapes" chapter, a primary distinction of cultural landscapes is the presence of artifacts that form a discernable fabric. A "cultural landscape" would be expected to form fabric-like compositions which capture the meaning of integrated cultural expression on the landscape. Individual artifacts (a building, a canal lock) exist within a cultural landscape. Of critical importance, in reference to specific artifacts, is that they are set within a larger

visible context . . . i.e. a landscape . . . and that a readable, identifiable relationship to this landscape can be discerned. Fabric-like compositions of artifacts find the most value when reflecting a particular period of significance, with readable connections to each other.

Visibility

While cultural landscapes vary widely in ease of observation, this project assumes that visibility is a requirement. History does not always leave traces. This inventory of cultural landscapes, necessarily, deferred to "that which remains". While Native American presence in the Corridor was long lasting and wide spread, for example, virtually no visual evidence of this era remains. Thus, while certain locations may have great value for known historical associations with native Americans, they do not constitute cultural landscapes.

Integrity of Definition among Component Diversity

A cultural landscape may be composed of one land use type, or several. The definition of the edges of a cultural landscape in a location where several land use types overlap and continue to indefinite distances is subjective. Such a judgement is made by a trained observer who evaluates the integrity of a composition of pattern elements by visibility and historic associations. The goal is the definition of cultural landscapes which exhibit integrity of history, purpose, and visibility, as distinct from adjacent landscapes which do not.

Identification of Cultural Landscapes: Guidelines

Scale

No minimum size is proposed to qualify as a cultural landscape, as long as it meets the criteria of fabric formation and visibility. In general, however, cultural landscapes are understood to be collections of artifacts that find meaning in larger patterns, distributed in logical response to people's needs and the opportunities of the land over an "expanse" of landscape. The scale of cultural landscapes are also judged in relation to the scale of the entire study Corridor, which at 125+ miles in length, is very large. Dozens of very small cultural landscapes in such a Corridor would lack the connections to create a coherent whole. Cultural landscapes in the National

Heritage Corridor are measured in miles, while a smaller study area might be divided into smaller cultural landscapes. At any scale, however, fabric formation and visibility are requirements.

Complexity of Eras

The Corridor has undergone a series of changes, and the landscapes within the Corridor document this transition. Many landscapes exhibit the artifacts of one particular era, with minimal subsequent change. Others exhibit several distinct layers in close association. The definition of a cultural landscape includes all eras that achieve significant visibility, while focusing on those eras that tell the most compelling story. For example, while New Hope has seen changes in modern times, it exhibits considerable integrity for its colonial and canal eras, and would be recognized as such in a definition of cultural landscapes. The Corridor near Allentown, by contrast, exhibits a complex but dramatic series of layers, with canal remnants, brick factories, and super highways in close association. Any given landscape, whether a composite overlay . . . or singularly representative, offers only that which is visible today - and constitutes in its simplicity or complexity a "single cultural landscape".

Identification of Cultural Landscapes in the Corridor

Summary of Physical and Cultural Elements.

At a regional scale of 1: 50,000, an overview of physical and cultural conditions and histories was prepared by county for all sections of the Corridor as a set of working documents. This overview included the following elements:

Geology is the basis for most interaction between mankind and the landscape. The distribution and success of agriculture, the potential for extraction of coal, slate, iron or lumber, the presence of topography that makes settlement easy or difficult, the location of rivers that create transportation opportunities are examples of this direct connection. Accordingly, regional geology was mapped, using current Pennsylvania Geological survey materials, as an indicator of cultural activity on the landscape.

Historical Maps illustrating the sequence of settlement, transportation, resource extraction and urbanism were assembled, compared, and summarized. These map resources included a variety of sources: 1) County atlas maps published during the 1870's. 2) Railroad Maps. 3) U. S. Geological Survey Maps starting with the first series published about 1900, and subsequent series as available to the present. 4) The Pennsylvania 2nd Geologic Survey, and certain subsequent publications, illustrate settlements, transportation systems, and mining in very useful form starting at around 1870.

This group of map resources was especially revealing of the sequence of cultural activity on the landscape, of the pattern of this activity in relation to natural resources, and of the major shifts in activity that have occurred in the Corridor.

Historical Overview

Research on the history of the Corridor characterized the study method from the initiation of the project. See the bibliography for sources of general information. As specific sections were studied in map form, additional readings were consulted and summarized.

On Site Observation was a critical part of the identification and evaluation method. Initial visual review of the Corridor concurrent with the overview of historical research, allowed familiarity with the various natural and cultural settings in the Corridor.

Understanding the relationship of natural and cultural context as identified in maps to their actual display on the land was a critical component of this regional scale summary.

Identification of Landscape Districts

The first level of identification of cultural landscapes occurs at the scale of the entire Corridor, where broad districts of landscape types were identified and displayed on working maps. The landscape districts define areas where cultural landscapes of particular types may be found, based on the resource base and cultural activities that have occurred there.

The landscape types were based on organizing themes of cultural activity that have occurred in the corridor, including 1) Transportation, 2) Agriculture, 3) Resource Extraction, 4) Industry and, 5) Urbanism.

These districts illustrate where potential for cultural landscapes of certain types exists. Subsequent identification of individual cultural landscapes at a local level will distinguish those that are more observable. Many local cultural landscapes will include elements or more than one theme, but the summary illustration of broader landscape districts serves to clarify important organizing patterns.

Identification of Local Level Cultural Landscapes

Following the preparation of the geological and cultural summaries, and of the identification of landscape districts, identification of cultural landscapes at a local level was undertaken. This activity compared mapped summaries of history, resources, and landscape districts with present day visibility, integrity, composition, and extent of observed cultural landscapes in the study area.

Criteria for identification of a cultural landscape described earlier in this chapter (visibility, presence of fabric, and integrity) were applied in the field. Those locations that met the qualifications described the chapter "Definition of Cultural Landscapes" under levels of observability for level I or level II were distinguished from the remaining landscape of the Corridor.

Individual cultural landscapes are mapped at an appropriate scale and described by location, identification indicators, principal landscape type, other land use components, principal eras, clarity, composition, and importance.

Maps, photographs and diagrams accompany each nominated cultural landscape.

Summary Classification of Observability

As described in the chapter, "Definition of Cultural Landscapes," cultural landscapes were classified by their relative potential for observability and interpretation.

Level I - Most Observable. Those landscapes that are highest in clarity with distinct compositions and connections to a theme.

Level II - Observable. Those landscapes that are less imageable with less distinct compositions and connections to a theme.

Level III - Less Observable. The entire remaining landscape of the Corridor.

Summary of Importance

Landscapes were evaluated in terms of their importance due to their scarcity, connection to major themes, or relationship to the region or National Heritage Corridor.

In addition, factors of evaluation for importance utilize the National Register criteria. The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

• that are associated with events that have made a significant contribution to the broad patterns of our history: or

•that are associated with the lives of persons significant in our past; or

•that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of as master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction: or that have yielded, or may be likely to yield, information important in prehistory or history.

Important - Those landscapes that exhibit several qualities or conditions of importance as described to a degree that

distinguishes them from other more common landscapes in the Corridor.

Exceptional. Those landscapes that are the highest, or truly exceptional, in importance to a degree that distinguishes them from the "important" landscapes of the Corridor.

The rating and its determination is summarized, and a conclusion as to the potential for the landscape or significant parts of the landscape for nomination to the National Register as a Historic District is proposed.

Summary of Critical Components

Those fabric elements that are essential to the composition and meaning of the cultural landscape are identified and their importance is summarized.

Proposed Level of Management

As defined in the chapter on management strategies, three levels of management are suggested for rated cultural landscapes.

Stabilization. Stabilization within a cultural landscape provides for the minimal prevention of destruction of critical components by natural or cultural forces.

Preservation. Preservation within a cultural landscape provides for the protection and observation of critical landscape components from destruction by natural or cultural forces.

Restoration. Restoration within a cultural landscape provides for the replacement of critical landscape components that had previously been partially destroyed by natural or cultural forces.

Proposed Further Study

Components or connections that suggest further study are summarized.