

A CONCEPT OF THE FIELD OF LAND USE IN RELATION TO FORESTRY

by

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INTRODUCTION

It is only in the past few decades that the field of land use has been widely recognized as both a legitimate area of study and an important part of natural-resource management. Communities that once relied upon the free market for their social and economic development are turning to political controls, guided by land-use planning and land-use legislation. They have been obliged to revise their policy, either because it was not leading to sufficient resource development, or because the carrying capacity of the natural-resource base has been put under pressure by population increase or resource deterioration. They have also been obliged to question a traditional viewpoint: that United States citizens have an inherited right to own property and to use this property as they wish.

As a matter of fact, the questioning of traditional doctrine has extended not only to private property and its owners, but also to public property and its managers. Both private and public land managers are being held socially accountable for their decisions and are being constrained by community sentiment and by the force of law.

There is an increasing number of citizens who formerly accepted land use decisions as inevitable and irrefutable but are now taking to the courts and the media to fight them. This advocacy position is found everywhere--from

elderly grandmothers sitting in pine trees in Florida to protest cutting--to organized environmental groups fighting the Mineral King development in California.

This change in the attitudes and values of the public has many underlying causes. Two of the major ones are (1) a growing public awareness of our dependency upon natural resources, and thus an increase in the value placed on them; and (2) a realization of the power that the public actually has--both the potential power of public opinion as well as present statutory power that authorizes public participation in both the planning and decision-making processes. These provide the opportunities to exert control over specific issues. Or to put it more simply, the basic cause is environmental education from both a biologic as well as an institutional standpoint.

Land use issues are found everywhere--from small local zoning decisions to national policy making. As environmental awareness has increased over the years, so has it become increasingly obvious that land use is a field in itself; not in the old sense of how people are using the land--so many acres planted in rice, so many acres used for grazing--but rather as a combination of both the physical and the social worlds. The physical character or use of the land can't be separated from those people that the land affects in one way or another together with their culture,

which includes their economic system, their institutions, their laws, their traditions and their values.

The field of land use cannot be understood unless this holistic view is taken. While a specialist may be able to determine, for example, how a private owner's woodlands should be managed to produce the most timber, if he doesn't take into account the goals of the owner or his value system, the institutional constraints that may limit certain types of use, or possibly the culture, values and economics of the region as a whole, it may be impossible to manage in accordance with a plan.

This generalist approach and the scope of the field would seem an impossible combination to resolve into anything approaching coherence and competence. In particular, it would appear to ensure superficiality to a great degree. The argument put forward in this study is that there are certain identifiable factors found in all land use issues. They are of necessity general; however, by organizing and delineating them the field can be presented in a way that forms a framework for analysis so that more detailed study and understanding is possible.

The Land Use Formula

Land use is both a deceptively simple and impossibly complex concept. Of course it is the use of land. But the question then is "How do you define land?" Is it that

physical entity on the planet earth that the dictionary calls solid ground, as opposed to the sea, or is it something more? Does it include the air we breathe and the water we drink as well, for the soil contains both these elements? And what about the minerals under the surface of the ground? To be realistic, then, the term "land" as used in this dissertation will incorporate all the attributes of the earth's surface including those lying above and beneath it. For within our system of private property rights, when we acquire title to a specific land area we not only acquire a solid piece of ground but we acquire certain rights to the air above it; to the sunshine, wind and rain; to the waters within or bordering that land; and to its underground resources--all within the constraints that society places upon such rights. In addition we acquire a social environment, as all land is under some kind of ownership or authority even if--as Antarctica--it has never been inhabited.

The second question follows directly. "What is meant by the term 'use'?" Again the dictionary states "to bring or put into service." While there are many living things that "use" the land--beavers are a prime example--this study is concerned only with those users who belong to the human race. Other living things will be considered services that the land provides. This is an arbitrary choice and is not

intended to be an endorsement of anthropocentrism, but merely to limit the boundaries of the field to a more manageable size.

When "land use" is considered as a field, then, it encompasses the ways in which man uses the earth's resources to create services to satisfy his wants. This means that "land use" by definition concerns both the physical world and the social world. There must be people receiving either benefits or penalties from the services of the land before there can be "land use."

The next question, then, is "What services does--or can--the land provide?" "Services" in effect describes the capability of the land. First, the field again must be narrowed to one area of interest--forestry. It can be argued that most lands have been forested at one time or other and these could all be considered forest lands. But that is not a practical definition. This study will consider forest lands as those lands that are wooded at the time of specific concern. What services can such forested lands provide? Or what capability does such land have? We could employ the Forest Service's multiple use concept, but it is felt that this does not include all possibilities. The following list, while admittedly broad, is necessarily so, being designed to incorporate all services:

1. Wood

2. Recreation and aesthetic values
3. Preservation
4. Water and other environmental influences
5. Minerals
6. Wildlife
7. Agriculture and range
8. Residential development
9. Urban development
10. Commercial development.

It may be argued that energy should be included as a prospective service from the forests. In this study's context, it would be a subset of (1) wood, as at the present state of our knowledge a tree must be cut and energy derived from its cellular structure in some form. The service of wood as used here includes all physical products derived from a tree--from sawlogs to sawmill residues used to run a steam boiler to turpentine.

Recreation and aesthetic values are grouped together because they both contribute to the same type of personal satisfaction. Forest lands provide the opportunity to participate in recreation of all types--from dispersed to intensive. Dispersed recreation includes activities that require extensive amounts of land, such as cross-country skiing and hiking; while intensive recreation activities are typified by such activities as camping and downhill skiing,

requiring less land area and more facilities. It should be noted that "wilderness" as commonly defined is included in this service; that is, backpacking, birdwatching, scenic viewing and other forms of recreation that are dependent upon a pristine environment. Aesthetic values are included as well, as this is an accepted area of research in the field of recreation and it has been shown that aesthetics plays an important part in the recreational experience.

Preservation is a service distinct from that of "wilderness". It is considered to be those values that are derived from allowing the land to remain in its present state. This state may be virgin (which is extremely rare) or altered by man's past use (by far the more prevalent situation). These values can include the retention of a gene pool for scientific research or simply the protection of a unique environment. In effect, it ensures the retention of options for the future.

Environmental influences include those effects that forest lands have on the surrounding physical environment; i.e., watershed protection, regulation of water yield, prevention of erosion, improvement of air quality, moderation of soil and air temperatures, and protection from winds.

Minerals are those solid as well as liquid or gaseous resources mined both under or on the earth's surface--as

oil, gas, and coal.

Wildlife includes all the attributes animals possess that humans appreciate--from the enjoyment of their beauty to their utility as a food source to their value for scientific research. It should be noted that this appreciation may be negative as well as positive; e.g. awareness of the danger inherent in grizzlies or fear of snakes. "Wildlife" as used in this study encompasses all the animal kingdom--fishes, insects, birds, game and non-game animals, reptiles, etc.

Agriculture and range are the opportunities that the land provides for the production of agricultural goods, including beef and dairy cattle as well as other livestock; farm crops such as wheat, vegetables and tobacco; orchard crops, and vineyards.

Residential development is a spatial service of the land, providing the opportunity for building houses, churches, small stores, schools and other kinds of dispersed construction in rural and suburban environments.

Urban development on the other hand, is the opportunity for the construction of housing, businesses, etc. in heavily populated areas.

Commercial development includes the opportunities for road construction, power line rights-of-way, hydroelectric installations and other specific large-scale projects.

It is obvious that some of these services are complementary while others are mutually exclusive. The relationship may depend upon the degree of use or magnitude of service required.

Any land use is an issue, as there are always alternatives present. A land use issue can exist if only one person is involved, because all people have at one time or other conflicting values within themselves. For example, a farmer may value a creek for its natural beauty and the fish it supports, but for economic reasons he must dam it up to provide a water supply for his livestock in dry weather. This is a land use conflict, existing solely within himself. This study will deal more realistically with land use conflicts among people or groups, and proceeds on the assumption that a land use issue exists when there is conflict concerning the human values placed upon services that the land can provide. The degree of conflict determines the magnitude of the issue. A land use issue may be defined then as conflict over the "appropriate" allocation of land among services--"appropriate" being the key word and acknowledged as a subjective value judgment. To take an example, a land use issue may arise over whether land should be rezoned to allow second-home development in an area that had previously been a privately-owned forest. The issue could concern the proposed land conversion, the

magnitude of development, or even anticipated construction techniques. The protagonists or actors in the issue may be individuals, groups, or society as a whole, and their areas of concern may be local, regional or national.

We say then that the field of land use encompasses the ways in which man uses the earth's resources to create services; in turn this will result in a land use issue if there is competition for or objection to these services.

It is obvious that the size of the field, incorporating as it does both the social and the physical worlds, makes very difficult the formulation of theories that would allow it to be studied in an analytical rather than intuitive sense. This dissertation will attempt to clarify and define the field by analyzing various issues and identifying elements that may be common to all. By noting the relationships between these elements and then evaluating their weightings (degrees of significance), it may be possible to better understand the field and its problems.

The basis for our model is this: That forest land use comprises a bundle of issues concerning one or more of the aforementioned services of forest land. We then construct a model, which is a general formula that can be used to explain each issue. The dependent variable in the formula is the issue (I) identified by the place or community where the issue arises (p), the actors or protagonists involved

(a), the forest service or services concerned (s), and the time it occurs (t). Within these four dimensions are found the boundaries of the issue.

The dependent variable in each forest land use issue then is

$$I_{\text{past}}$$

The independent variables are those that are found in varying degrees in each issue, with weightings that necessarily change with the issue and serve to explain it.

They are:

1. Value system (VS)
2. Taxation and law (TL)
3. Economic system (ES)
4. Land tenure (LT)
5. Environmental factors (EF)
6. Transportation system (TS)
7. Resource management (RM)
8. Interest groups and their communications (IG).

The functional relationship that characterizes forest land use is then

$$I_{\text{past}} = \text{fn}(VS, TL, ES, LT, EF, TS, RM, IG).$$

It should be noted that any of the weightings can approach zero in a given case. It should also be noted that the magnitude of the issue is determined by the degree of conflict present, and this may be identified by the

dimensions. The quality of the issue, on the other hand, is determined by the independent variables. Both are subjective determinations.

This formula identifies the two parameters of the field that the study is attempting to clarify: (1) the content of the field and (2) the principles that govern its phenomena. A graphic version of the land-use formula is given as Figure 1.

Methodology

To accomplish the research objective of identifying both the content of the field and its underlying principles, the case study approach is used. By considering a variety of cases over time, those variables that consistently recur will be identified and their relative weightings in each case determined. These weightings will be expressed as coefficients and will be on a gross, or general, level with regard to their importance: from (3) primary, the most important, to (2) secondary or moderate, to (1) negligible. Each case will then be reduced to a formula containing the issue (I_{past}), its independent variables and their weightings (or degrees of importance). In this manner the case can be viewed holistically and compared to others.

Eleven cases were chosen with a different service of the land playing the most important role in each. The

LAND USE ISSUE

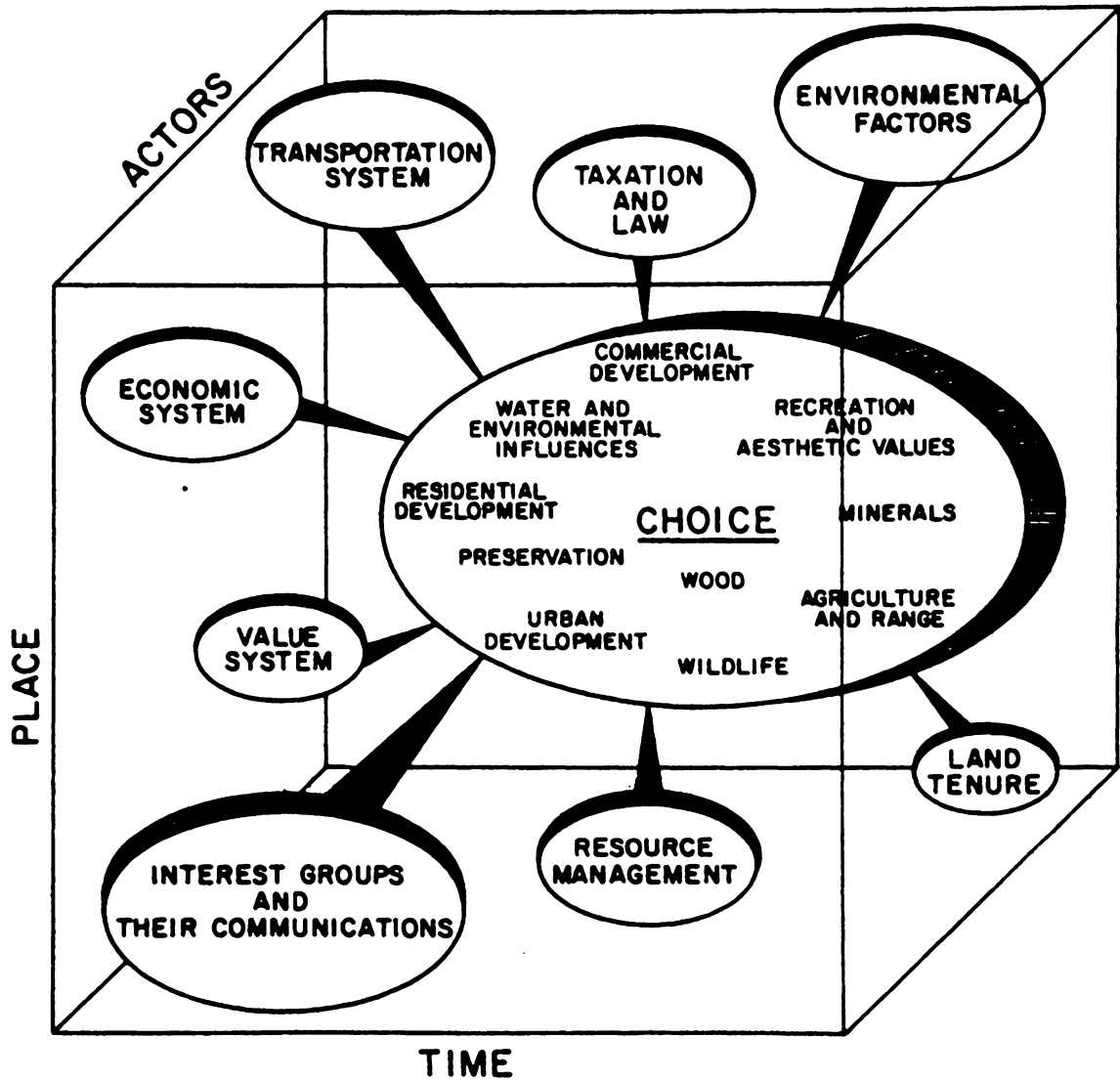


Fig. 1. A graphic version of the land-use formula.

service of agriculture and range was broken down into two separate cases because of its diversity and importance. These eleven cases thus illustrate eleven different kinds of land-use issues. The cases were also chosen to represent as many different places or communities as possible. The time periods were for the most part limited to the last two decades because of constraints imposed by the availability of information. The objective in the choice of cases was to obtain a representative overview of land-use cases that have occurred over time across the country.

Because of the different methods used in describing each case--one may rely primarily on newspaper accounts, another on litigation proceedings and still another on interviews with participants--bias may appear to be present in that all points of view are not equally represented. This may be true; however, the intent of the study is to identify what variables are present in a case--or issue--and to try and determine why they are there. These variables are present in many instances because of bias. Land use is a subjective field as the value systems of people are involved and so bias is always present. This will not affect the objectives of this study which are (1) to clarify the content of the field, and (2) to identify the principles that govern its phenomena.

Definitions

Because this dissertation is the proposal of a definition of land use, the basic terms used in discussing this definition are explained as follows:

land use - the ways in which man uses the earth's resources to create services to satisfy his wants.

land use issue - the inevitable conflict over the appropriate allocation of land among services.

services - describe the capability of the land.

dependent variable - the land use issue (I_{past}).

dimensions of the dependent variable in which the boundaries of the issue are to be found: p (place), a (actors), s (services), t (time).

independent variables - the eight variables that explain the issue: value system (VS), taxation and law (TL), economic system (ES), land tenure (LT), environmental factors (EF), transportation system (TS), resource management (RM), interest groups and their communications (IG).

weightings - the coefficients of the independent variables that identify their relative significance: primary, secondary or negligible.

character of the issue - determined by the independent variables.

land use formula - the formula that identifies the issue and describes it:

$$I_{\text{past}} = \text{fn}(VS, TL, ES, LT, EF, TS, RM, IG).$$

GASTON LAKE WATER WITHDRAWAL

This case concerns water withdrawal; specifically, the issue is where a natural resource should be used. Although the use of water is the issue, its basis is economic development.

The services are wood and water, and they are highly correlated. The forest industry plays a large part in determining the water needs of two regions wishing to use the same source of water. The proposed withdrawal is from the Pea Hill Creek area of Brunswick County, Virginia; the two regions are Southside Virginia and Tidewater Virginia.

The principal protagonists in this issue, however, are not the regions, but rather a federal agency, the Corps of Engineers, on the demand side, and a group of state and local government agencies located at the water supply source on the supply side. Various other state agencies on the demand side of the spectrum are secondary actors.

Southside Virginia

Southside Virginia is that part of the state bounded by North Carolina on the south, Richmond on the north, the Coastal Plain to the east and the foothills and mountains of the Blue Ridge on the west. It is the southern Piedmont area of Virginia--a region of hot, humid summers, mild winters, and extensive forest and farm lands--a gentle,

rolling plain with an agrarian economy and few population centers.

Although there are good primary roads all through the area, traffic is relatively light, and if you travel the secondary roads you will see few cars. The area is not affluent--houses for the most part are small and neat, with many old farmhouses and mobile homes scattered across the land. The farms are generally small, and many residents supplement their incomes by working in the few larger towns or in the woods. The main agricultural crops are tobacco, soybeans and peanuts, although grain crops are grown and both dairy and beef cattle are raised. Almost everyone has a garden, and large crops of vegetables such as cucumbers and melons are grown as well.

Those places listed on a road map of the area require a stretch of the imagination to be considered towns. Most are just a few houses clustered around a church and gas station that is also the general store. They are communities in the true sense of the word--"a social group or class having common interests". The small stores and churches are the centers of these communities and serve as local communication centers. Most of the stores are as they have been for decades--with pot bellied stoves surrounded by chairs and benches and an unbelievably wide assortment of goods. These stores open before daylight to accommodate

farmers' hours and remain open long after dark--by which time the chairs and benches are usually filled, although there are always some people to be found there passing the time of day. Many of the stores have been in the same family for generations, and these family names are found throughout the region. It would seem as though everyone is related to everyone else--at least distantly. The initial settlers of the region stayed, and because the area was rural and relatively isolated with few newcomers moving in, they intermarried and had large families. Until recently, out-migration far surpassed in-migration as the lack of local job opportunities caused the younger people to move elsewhere. The population high point was in the early 1900s and has declined steadily since then. While many young people left, the older residents would never consider doing so, and it is not unusual for people in their 50s and 60s to die without having spent one night away from the small communities described above.

Brunswick County

Brunswick County is in the center of this Southside region, with the Nottoway River its northern boundary and North Carolina its southern boundary. Its fertile soils, mild climate and favorable terrain combine to provide a valuable natural resource.

Soil

The terrain is typical of the Piedmont Plateau physiographic province; level or slightly rolling with elevations varying from 200 to 400 feet. The soils are generally clay Piedmont types in the western part of the county and sandy Coastal Plain types in the east. These soils, together with the igneous and metamorphic rocks underlying the county, form an important natural resource. The county has several stone quarries, a brickyard that uses native clay, and granite rocks are quarried in several places.

Water

Another of the county's significant natural resources is its water--both surface and groundwater. Its most obvious water resource is its rivers and creeks. The Nottoway River on the northern edge of the county is a beautiful scenic, wild river flowing through forests--much appreciated by canoeists and float fishermen. The waters are clear and clean and there are several old grist mills still in use along its banks. The Meherrin River, also broad and free-flowing, cuts through the center of the county. Both rivers have a good volume of flow and good quality water. The Meherrin and its tributary furnish water to Lawrenceville, the county seat and largest town, as well as to the smaller town of Alberta. There is no public water system in the county, and drilled or dug wells are relied

upon to provide water for both towns and individual residents. The Piedmont region generally has limited to moderate quantities of groundwater available, varying with the characteristics of the underlying bedrock.¹ Thus drilled wells are more successful in the western part of the county where the underlying bedrock is igneous and metamorphic than in the center of the county where it is more granitic and gneissic and where it is necessary to hit a waterbearing fracture to obtain sufficient water. These drilled wells usually produce less than 50 gallons per minute and are from 100 to 400 feet deep. Dug wells, on the other hand, are more prevalent for domestic and agricultural use. These are large diameter, shallow wells dug into the soil and weathered rock overlying the bedrock, usually in low flat places where there is at least 25 feet of soil depth. They vary from approximately 30 to 60 feet, and while they are cheaper and more apt to yield an adequate water supply, they have the drawback of being affected by prolonged drought and possible surface contamination. The variation in groundwater supply is illustrated by the fact that Alberta has two wells that provide less than 50,000 gallons per day (gpd), while Brodnax, less than 10 miles away, has one well yielding approximately 108,000 gpd.² At present, the available groundwater supply is more than adequate, although the fluctuation in surface water supply may be a problem to

Lawrenceville and Alberta, as there are no impoundments to store the water for times of low-flow conditions.³

Forests

By far the most important natural resource of Brunswick County is its forests. The county is 79 percent forested, with 290,505 of its 366,933 total land acreage in commercial forest lands.⁴ Almost all of this forested land is privately owned, with only 3 percent in public ownership. 26 percent is owned by the forest industry, 34 percent by miscellaneous private owners, and 37 percent is owned by farmers. The forest management practices of private landholders are an important factor in the forest services produced by the county. The two major forest types in the county are oak-hickory (125,323 acres), and loblolly-shortleaf (94,012 acres). There are also 58,046 acres of oak-pine and 13,124 acres of elm-ash-cottonwood. Thus hardwoods predominate, but not by much, although the proportion of hardwoods to softwoods is increasing. A comparison of forest survey statistics of 1966 and 1976 indicates that while growing stocks of hardwoods are increasing, softwood stocks are decreasing, even though the total amount of forested land has increased by approximately 5,000 acres. As of 1975 annual removals of sawtimber and growing stock exceeded net annual growth by 41 percent.

Forestry and forest products have been an important

part of the county's economy since the forests were initially cut in the early 1900s and Brunswick has been among the first four counties in the state for the past 20 years in terms of volume of forest production.

Transportation

The county is served by two major highways--Interstate 85, leading to Richmond, the state capital 65 miles to the northeast, and Washington, D.C. 105 miles beyond that--and State Rt. 58, which is a direct route to Norfolk and the port of Hampton Roads, 95 miles to the east. The county thus has good access to three major markets. Three railroads cross Brunswick, providing good freight service; however, the county has only one small airport with no commercial air service.

Population

The county seat, Lawrenceville, with a population of 1,636 is located on Rt. 58 directly in the center of the county, with the only other incorporated towns, Brodnax (pop. 453) and Alberta (pop. 466) situated on Rt. 58 and I-85 respectively. The county itself has a population of 16,172 (1970 census figures).

Between the years of 1950 and 1970 the population of the county decreased at an annual rate of one percent. During the 1950s this was caused by out-migration, coinciding with the decline in agricultural employment

opportunities and lack of available alternatives. However, as manufacturing has increased, out-migration has declined from 5,400 persons in the decade of the '50s to 2,800 in the '60s--a rate that is remaining constant into the '70s. The decrease in the birth rate, however, maintains the total county population decline at a steady one percent that is projected to continue. The dependent ratio (the proportion of the population under 15 and over 64) is 67.7--far above the state average of 57.1. While the number of young people who will enter the labor market is decreasing, the number of dependent older people is increasing--a factor that will affect the county's economy in the future.

Employment

The major land uses in the county are forestry and agriculture. While agriculture traditionally has been the largest employer, in the past twenty years it has been displaced by manufacturing, which has doubled during that period.

The largest manufacturing employer is the lumber industry, which has traditionally been the leader. While the number of persons employed in the lumber industry has remained relatively constant over the past 20 years, its percentage of the total work force employed in manufacturing has dropped from 70 percent in 1950 to 35 percent in 1972 as diversification and growth has taken place. Other

industries now include leather, apparel, stone, clay and glass, textiles, and furniture. These are all relatively small firms, with a shoe factory employing 225 people by far the largest. Although job opportunities have increased, a substantial portion of the work force commutes out of the county and this number is increasing--from 17 percent in 1960 to 32 percent in 1970.

Agriculture, long the leading employer in the county, continues to decline, although Brunswick is an important agricultural producer in the state. It ranked fourth in tobacco production in 1969 and also produces large quantities of soybeans, grain and peanuts. While tobacco is the major economic crop, dairy products rank second. The percentage of land area in farms declined from 50 percent in 1964 to 40 percent in 1969 as the less productive agricultural lands were converted--principally to forests. Prime agricultural land is now being used more intensively.

In line with the rural aspect of the county, per capita income in 1971 was \$2,494, with over 40 percent of families in 1970 below the poverty level. This compares to a statewide total of 22 percent. County wages are much below the rest of the state, with average wages 30 percent less than the state average, or a \$5,500 average county wage compared to a \$7,700 average state wage.³

The picture then, is of a traditionally agriculturally-

oriented county, sparsely populated and relatively poor, with a history of out-migration due to a lack of job opportunities and low wage rates.

Lake Gaston

In 1962 this picture was altered considerably when Virginia Electric and Power Company (VEPCO) completed their construction of Lake Gaston, a reservoir 34 miles in length along the Virginia-North Carolina border, encompassing 20,300 acres with 350 miles of shoreline. Although located principally in North Carolina, the lake extends through Mecklenburg and Brunswick Counties in Virginia for 18 miles with 75 miles of shoreline in Brunswick County.

Gaston Lake is one of a series of impoundments on the Roanoke River with Kerr Reservoir lying upstream (48,900 acres in area) and the Roanoke Rapids, North Carolina impoundment (4,960 acres) downstream. The river then flows unimpeded through the North Carolina coastal plain to Albemarle Sound.

Gaston was licensed by the Federal Power Commission in 1960 to provide both hydroelectric power and recreation opportunities. The Lake Gaston dam, owned by VEPCO, is used for peak power generation; however, the lake level is not to vary more than one foot from the standard 200-foot elevation. To maintain this constant level, water is withheld or introduced from Kerr Reservoir, which is managed

by the Corps of Engineers and may have a water level variation of as much as 32 feet. The entire watershed is treated as a unit with management responsibility shared jointly by VEPCO and the Corps of Engineers.⁵

Recreational use of the lake has increased astronomically since its completion, particularly at the eastern end. This is principally because of its easy access to major urban areas such as Tidewater Virginia, Richmond, Washington D.C., and Raleigh; and also because of the quality of its water. The lake is exceptionally clean, meeting North Carolina's highest quality standards, and is especially popular not only with swimmers, water skiers, and boaters, but also bass fishermen. Major bass fishing tournaments are held there regularly and the portion of the lake with the best reputation among these fishermen is Pea Hill Creek, a tributary of the Roanoke River located for the most part in Brunswick County, although the North Carolina line cuts across its southern end.

When the lake was built, water backed up along Pea Hill Creek, which flowed through a ravine to the Roanoke River. The water in this area is deep, with a good flow--clean and clear with stable conditions and many stumps and snags in shallow shore waters. In short, perfect bass fishing water. The creek has been fished extensively since completion of the lake and has become the focus for national as well as

regional bass fishing tournaments.

Upon completion of the lake, property values were turned upside down in the Pea Hill Creek area and the environment of the southern part of Brunswick County was completely altered--culturally as well as physically. As one local farmer said, "Before the lake came in, the only thing this land was good for was to hold the ends of the earth together."

Gasburg

The community of Gasburg, Virginia, two miles from Pea Hill Creek, exemplifies what happens when a new resource is created in an area where the main resources have been forest and farm lands. In 1963 there were three small country gas station/stores and two churches at this backroads crossroads a half hour's drive from Lawrenceville, Virginia and Roanoke Rapids, North Carolina.

Within a few years a lot on the lake in this area appreciated from a few thousand dollars to \$15 or \$20 thousand. Mobile homes and second homes sprang up everywhere--a country club was built and expensive homes went up all around it. The small stores took out their stoves and installed air conditioning and a genuine grocery store was built--although it also contained the post office. The church expanded and built a tennis court--and the local minister built a golf course on the dirt road leading to the

lake, which of course necessitated paving the road. A local ante-bellum plantation house was converted to a restaurant for tourists and the field at the crossroads that had been a carpet of blue bachelor buttons became a self-service gas station. Within ten years, the area was completely changed. The local people for the most part accepted the change as interesting and treated the newcomers with their customary friendliness and helpfulness, and the entrepreneurs among them had a field day. For example, the owner of one of the stores--which literally sells anything you could want--with one-week guaranteed delivery for something extremely exotic--also rents house trailers and boats for weekend fishermen, sells them fishing licenses; and his wife, who is the local Justice of the Peace, collects the fines issued by the Fish and Game Commission. In effect, he is making a fine effort to corner the market.

Probably the most knowledgeable local resident concerning land in the area and its values and services is Clyde Delbridge. His family has lived in Gasburg for generations--he owns extensive tracts of land in the area--and he was farsighted enough to anticipate what would happen when the lake came to the county, although he says that no one know the true value of the land after the lake was built. Land use prior to that time consisted mainly of small subsistence farms and woodlands. Many landowners

worked in the mill town of Roanoke Rapids, which has textile mills, a pulp mill and a fiberboard plant. The main product of the land was timber.

In this region of sandy soils and a mild, humid, climate, loblolly pines grow like weeds and are usually clearcut on a 15 to 20 year rotation. Both pulpwood and sawtimber markets have been consistently good with many markets available to forest landholders. With Union Bag and Camp Manufacturing (pulp and lumber) 50 miles away in Franklin, Champion International and Federal Paperboard (pulp and fiber) in Roanoke Rapids, Georgia-Pacific (plywood) in Emporia 15 miles down the road, and a number of smaller sawmills and wood dealers located directly in the county, it is a wood sellers' market; prices are good and demand is high.

Land use

In the early '20s when the timber in the region was initially cut, local wood dealers bought land and sold the timber to the lumber companies. In many cases the companies then bought the bare land from the dealers, who could not afford to keep such large amounts of capital tied up for long periods of time. In this way the large wood-producing companies acquired large tracts of land when land prices were severely depressed--as little as \$2 per acre.

The land for the lake was sold to VEPCO for \$75 per

acre--about twice the going price--and there was little or no opposition at that time to construction of the lake, as no one was being financially hurt or displaced. The land was poor; it was hilly and used for pasture and not much else. Landowners who sold their lands to VEPCO felt that they had received a good price for it.

When the lake was completed, the lumber companies owned large tracts of lakefront property, as did local residents like Mr. Delbridge who had been a wood dealer for 40 years and retained much of the land he acquired. Some outsiders, anticipating the demand that would be generated for waterfront property, came in and bought up as much as they could from the local farmers, but many residents had no interest in acquiring what for them were large amounts of money at the expense of their way of life, and they remained on the family farms situated on the shores of the lake. However, as most of the land was not being used for anything other than woodlands or pasturelands, development began almost immediately.

Mr. Delbridge began the first--and still only--commercial enterprise on the creek, starting Delbridge's Marina on 65 acres of his family farm in 1963 as a beach and small boat dock selling bait and gas and catering to the fishermen who quickly found the creek. Within the next few years the marina grew from one small

camping trailer/store into a large developed campground that he sold for \$300,000. Since then part of it was resold for \$1.2 million and it is now a multimillion-dollar operation known as "Camptown" with permanent trailer lots as well as overnight camping, a restaurant, recreation center, swimming beach, store, boat rental, sales and repair, beauty parlor, and almost anything else a tourist could want. And it is still growing--within the past year a new marina has been dredged and a \$250,000 building complex constructed. Delbridge's holds several bass fishing tournaments each year, and fishermen come from all over the United States as well as from other countries. Several trophy bass have been caught in the creek, although fishermen are beginning to worry that it is being overfished.

During these years, land values have skyrocketed, as is illustrated by Mr. Delbridge's experience. In 1963 he was selling his best one-half acre waterfront lots for \$1,800. Within five years he was selling his poorest for \$15,000. Since the lumber companies own much lakefront land, he traded some of his inland timber lands to them for the shore property. In 1963 a company owning 25 acres on the creek offered it to him at a 3 for 1 trade. The deal fell through and the company decided to keep the land. Five years later they offered it again--but at a ratio of 20 for 1, which he considered a fair price.

As prime land becomes more scarce, land values continue to escalate and more of the residents realize the value of the lake to the economy of the area. Every year one or two new services are provided for the campers, fishermen, and second-home owners who continue to grow in numbers. Gasburg in 1978 acquired a sandwich stand and a building supply company to capture some of the business that was going to Roanoke Rapids--the largest town nearby.

Not only second homes are being built, but year-round homes as well, although the lack of job opportunities in the region means that these are primarily being built as retirement homes. Lakefront lots initially had few building restrictions and many people bought them as mobile home lots. Increasingly, however, building lots are restricted and the homes being built on the creek represent large capital investments. Even though they are used as second homes in many cases, they could be easily converted to year-round residences.

The Pea Hill Creek area, then, while retaining its rural character, has undergone extensive economic development, which shows no signs of abating. Newcomers who have purchased land are upgrading their holdings and businesses are moving in to fill the void in services available for them. As the local residents have become more aware of the economic opportunities that the lake can

provide, they regard them as the means to the end of making the area a "better" place to live--better in the sense of providing more job opportunities and a higher standard of living. As Mr. Delbridge says, "This has always been a backward area needing industry, but with little to offer in the way of incentives for development of any kind. Now we have three things that developers look for: (1) water, (2) sewage (as a by-product of water), and (3) recreation." The lake has replaced timber as the area's primary resource.⁶

The Proposal

The Corps of Engineers proposes to alleviate the water supply problems of Tidewater Virginia (the South Hampton Roads area) by installing a pipeline to pump water 120 miles across southern Virginia from Pea Hill Creek on Lake Gaston. Looking at a map, Pea Hill Creek is the first major body of water you come to if you draw a line due west along the North Carolina border from Hampton Roads. South Hampton Roads is in the James River Basin watershed and Gaston Lake is part of the Roanoke River watershed. The proposal would thus require an interbasin transfer of water--illegal under the riparian doctrine that is common law in both Virginia and North Carolina.

There will be no treatment facility at the source--the only facility located there will be the intake structure, pump and pipelines. The pipelines will consist of two

48-inch diameter pipes, with an intake structure located in the middle of the creek--which is relatively narrow--1000 feet south of the Rt. 626 bridge.⁵ It will be less than a mile downstream from Delbridge's Camptown, the headquarters for most major fishing tournaments on the lake, the social stopping-off point for boaters, and the only boat gassing facility for miles. In the summer there is a steady stream of boat traffic going up and down the creek to and from the marina. It would be difficult to find a more heavily-traveled portion of the lake.

The Issue

1969

In 1969 the state regional planning agency of southeastern Virginia--the Southeastern Virginia Planning District Commission (SVPDC)--began its initial study of the region's water supply problems. At that time, water use projections indicated that the resources of the region would not be adequate to meet projected demand by the year 1980. Because the area is one of the most populous in Virginia with a very high rate of growth, and water problems continued to multiply, it was felt by the state that a separate commission should be authorized to deal with this problem.

1973

Accordingly, in 1973 the Southeastern Water Authority

of Virginia, a public corporation, was chartered by the State Corporation Commission. The agency is composed of representatives from the cities of Chesapeake, Franklin, Norfolk, Portsmouth, Suffolk and Virginia Beach and the counties of Southampton and Isle of Wight, and is closely tied to the Southeastern Planning Commission, as the director of the Planning Commission is the chairman of the Water Authority. In effect, then, a planning agency was given operational authority. Meanwhile, the Southeastern Planning Commission continued to study the problem (completing five separate studies by 1975) and identified the Blackwater/Nottoway river basin as the best source of water to meet the most pressing needs of the region.^{7,8}

Virginia also began discussing with North Carolina the need for coordination of planning for water resource use between the two states to solve mutual water problems. Both states adhere to the riparian doctrine, under which upstream users cannot diminish the quantity or quality of water so as to adversely affect downstream users. Also, riparian use of water is limited to the watershed of its origin; therefore interbasin transfer of water is not authorized. As many of Virginia's rivers flow through North Carolina, and bodies of water such as Kerr Reservoir and Gaston Lake are located in both states, usage by one state naturally affects that of the other. The Sounds of North Carolina are greatly

affected by rivers originating in Virginia, which influence such conditions as salinity and pollution that in turn affect shellfish, gamefish and invertebrate populations. Groundwater withdrawals also require coordination of users, as aquifers are common to both states.

1974

Realizing the necessity for cooperation with regard to planning and management of water resources, the two governors signed an agreement to form an interstate water study commission (The North Carolina-Virginia Water Resources Management Committee) on August 15, 1974. They chose this method over a formal compact, believing that it was the simplest way to address pressing problems. The problem areas listed as being the most urgent were: (1) developing plans for common river basins, (2) developing water quality and flood protection plans in adjoining coastal areas, (3) preparing quality management plans for common river basins, (4) considering groundwater withdrawal problems in adjoining coastal areas and (5) considering potential commercial river basin reservoir developments.⁹ The Committee, while formed with the best of intentions, did not produce any recommendations or solutions and gradually became inactive.

On December 10, 1974 the first correspondence concerning the Gaston Lake water withdrawal proposal was

received by the Southside Planning District Commission, located in South Hill and responsible for Mecklenburg and Brunswick County, among others. At that time the Water Authority expressed an interest in withdrawing water from the Roanoke River Basin in general and Kerr Reservoir and Gaston Lake in particular.

Opposition by local interest groups, both governmental and private, began immediately. The South Hill Town Council passed a resolution opposing withdrawal from either lake and the Virginia B.A.S.S. State Federation expressed their concern to the Water Authority. They were notified by that agency that preliminary permit requests had been made, and preliminary negotiations had been started with VEPCO, as well as the Corps of Engineers, the Federal Power Commission, and the Southeastern Power Administration to determine the impact of the proposed withdrawal upon Lake Gaston and Kerr Reservoir. As the BASS group could not obtain specific information from the Water Authority, they wrote VEPCO, which promptly forwarded the details. The Water Authority had initially approached VEPCO with a proposal to withdraw a maximum of 40 million gallons per day (mgd) from the lake for the lower Tidewater area. In later discussions this was increased to 50 mgd. On December 19, 1974 the Authority met in Norfolk with VEPCO and Corps of Engineers personnel, and later VEPCO discussed the Lake

Gaston license proposal with other federal agencies that would be involved. In addition, the State Water Control Board and the Office of the Attorney General were notified.

1975

On February 18, 1975 the Water Authority Administrative Officer met with the Brunswick County Planning Commission to discuss withdrawal specifically from Pea Hill Creek.

In May of 1975 the Southside Planning District Commission reported on the proposed plan, as well as on alternative water sources that had been considered by the Water Authority. Potential water sources were identified and evaluated: desalinization, wastewater reuse, groundwater, and surface water from the Chowan, James, Roanoke, Dismal Swamp and Albemarle drainage basins. Evaluations included quantities available, quality, environmental risk, potential constraints, and development costs. The Water Authority determined that Lake Gaston and the Northwest River were the only economically feasible resources that could supply the proposed system; and the Northwest River alone could meet only short-term demand. The proposed plan was to develop them jointly--with 10 mgd supplied from the Northwest River by 1978 and 50 mgd from Lake Gaston. Preliminary design and easement acquisition for Gaston would begin in April of 1976 if approval were granted, construction would begin in 1980, and it would be

on-line by 1982. Costs were estimated at \$77.5 million and water would cost users 11 cents per thousand gallons for treated water and 3 cents per thousand gallons for raw water.

The Southside Planning Commission asked the Corps of Engineers' Wilmington, North Carolina District Office, which has jurisdiction over Kerr Reservoir, about possible water-use conflicts. The Corps determined that any water-use conflict would exist with VEPCO rather than the Corps, as the Corps has a power contract with VEPCO to provide specific amounts of water, and they would not pass more than those specified quantities from Kerr into Gaston. Any loss in water capacity (energy) could be calculated in monetary terms and VEPCO could then be reimbursed. The Corps also did not feel that there would be a conflict between North Carolina and Virginia, as the water would be withdrawn from Pea Hill Creek in Virginia.

The Southside Planning Commission, however, believed that there were several considerations that might discourage implementation of the proposal: (1) many localities in the Water Authority could not afford to participate in such a plan; (2) on July 1, 1976 Virginia law was changed to require permission from the local county government before water withdrawal could occur; and (3) the encouragement of growth in an overpopulated area with both physical and

social resource problems, at the expense of depletion of the natural resources of another area, might be questioned¹⁰

In December 1975 the Virginia State Water Control Board issued a news release concerning the groundwater problems of southeastern Virginia. In 1973 the state legislature had passed the Groundwater Act, which authorized designation of areas as "critical groundwater areas". In such an area use permits would have to be obtained, although the grandfather clause would apply to existing users. The report stated that in February 1975 the southeastern coastal plain was designated as such an area because of critical declines in aquifer levels, principally due to large-scale industrial pumping. In the Franklin area, approximately 30 miles east of Brunswick County where Union Camp, Hercules and Georgia-Pacific all have plants, the water table had declined as much as 200 feet, and as a result groundwater that used to flow eastward to the coast now flowed toward Franklin. Union Camp Corporation pumped more than half of the principal aquifer's withdrawals, or over 24 mgd. Including other industries in southeastern Virginia, the industrial pumping total usage was 40.8 mgd. The report noted that while groundwater withdrawals in 1975 were slightly less than previous years, in June 1975 a high chloride content was found in an observation well near Franklin, indicating that saltwater was intruding from the coast. Thus there

were quality as well as quantity problems with groundwater in the region.

Another problem of concern to the Water Control Board was a serious discrepancy between the amount of groundwater claimed during registration for permits and the actual volume pumped from the principal aquifer. These claims total approximately 105.6 mgd, twice as much as the 48.5 mgd pumped the previous year.¹¹ Accurate information was (and is) needed to determine exactly how much groundwater is available throughout the entire area, and in August 1975 the Board appointed a task force to study this question.¹²

During this same time period (1974-75) local interests in the Southside Hampton Roads area asked their Congressional representatives for additional help in solving their water supply problems. As a result, on June 11, 1974 the Committee on Public Works of the U.S. Senate adopted a resolution that directed the Corps of Engineers to determine whether water supply projects could be developed to meet the needs of the Hampton Roads area. In 1975 the Norfolk District Corps of Engineers received a \$300,000 grant from Congress to conduct a three-year study into alternative sources of water for the Tidewater area and to develop a long-range plan to meet its demand. Long-range in this case was defined as 40 years, or until the year 2030.^{13,14,15}

At the end of 1975 we now have three state groups, an

inter-state group and a federal agency all studying the water supply problems of southeastern Virginia: the State Water Control Board (responsible for monitoring water quality in the state, but with no jurisdiction over quantity); the Southeastern Virginia Planning District Commission (a planning agency); the Southeast Water Authority of Virginia (an operational agency); the North Carolina-Virginia Water Resources Management Committee; and the Norfolk District Corps of Engineers. These groups are all at the eastern demand end of the geographic spectrum. At the western supply end we have two other federal agencies involved in the Lake Gaston withdrawal, the Federal Power Commission and the Wilmington District Corps of Engineers; VEPCO, a private corporation; the Southside District Planning Commission, a state agency; local and county governments; and several private organizations.

Opposition to the proposal intensified in the Lake Gaston area. The Mecklenburg County Board of Supervisors passed a resolution opposing water withdrawal; the Kerr Lake Property Owners Association expressed its opposition, as did the Kerr Lake Board of Realtors; the BASS Federation reiterated theirs; and the Southside Planning Commission held an open meeting in South Hill to gain citizen input--118 attended, all were opposed. The Planning Commission became the focal point for the opposition,

together with the County Administrator of Brunswick County, representing the County's Board of Supervisors. In effect they were the Southside counterparts of the agencies in southeastern Virginia, the Southeastern Planning Commission and the Water Authority, planning and operations groups concerned with demand and supply.

The Southside representatives attended all Water Authority meetings in Norfolk and pressed them, the Corps of Engineers, the Water Control Board and the State Health Department for answers to citizen questions. They did not consider the responses adequate. A committee was formed to serve specifically as a source of accurate information for all citizens. Called "The Roanoke River Resource Management Committee" and representing local governments, Chambers of Commerce, property owners, businessmen, real estate developers and conservation and environmental groups, its stated intent was "to oppose any attempts to divert water or any other natural resource from the basin to any other area when such action would not assist the growth of the communities within the Roanoke River Basin." It advocated the use of natural resources to provide comprehensive development of the basin while providing for the maintenance of the quality and standard of living in the basin.¹⁶ North Carolina groups joined in the protest. In late 1975 the Water Authority applied for a permit to the Wilmington Corps

of Engineers as well as to the State Water Control Board to withdraw 40 mgd from Pea Hill Creek. They were informed by the Corps that an Environmental Impact Statement, estimated to cost between \$100,000 and \$300,000, would be required. This was one of the Town of South Hill's arguments to the State Water Control Board in a January 1976 Mailgram.

1976

On March 24, 1976 the Water Authority voted to tell the Wilmington Corps to freeze their application and agreed to advocate the Blackwater/Nottoway alternative, as well as expanded groundwater use, to alleviate their supply problem.

Meanwhile, the Southeastern Water Authority of Virginia now became the Southeastern Public Service Authority--whether to get away from "water" terminology, a natural focus of opposition and concern, or whether merely to expand their authority to other areas are reasons that occurred to the Brunswick County Administrator.⁶ In any event, the Public Service Authority and the Corps of Engineers now initiated the second phase of the water issue.

In January 1976 the Norfolk Corps of Engineers began their two and one-half year study to be completed in June 1978, when their recommendation for the most feasible alternative water source for Tidewater would be submitted to the Division Engineer of the Corps in New York. The Corps initiated a series of workshops to screen alternatives and

public hearings to gain citizen input. These first workshops and hearings were held in Norfolk in 1976; however the Southside Planning Commission and Brunswick County petitioned the Chief of the Corps in D.C. to move the meetings to Southside where the impacts of the proposal would be felt and where the majority of opposition existed. Accordingly, the remaining meetings were held in Southside Virginia and North Carolina.

The procedure was to be as follows: at the first public meeting, all alternatives would be considered; at the second meeting, these would be narrowed to twelve; at the third meeting, four would be identified; and at the fourth meeting there would be a thorough evaluation of these final alternatives, and one would be recommended to the Corps and Congress.¹⁷ At the first meeting, there were some 36 alternatives proposed, including such widely diverse options as desalinization, withdrawal from the York River, and obtaining water from icebergs towed from the South Pole.

1977

At the second meeting in May 1977 in South Hill the Corps presented their list of twelve alternatives. Among these were Pea Hill Creek on Gaston Lake, and Kerr Reservoir. Other alternatives included withdrawals from five different portions of the James River, the Nottoway/Blackwater combination of storage impoundments and

pumping, construction of Lake Genito on the Appomattox with additional purchased water, withdrawals from the Roanoke Rapids Reservoir in North Carolina, the Roanoke River in North Carolina, the Chowan in North Carolina, and finally desalinization, which had been included at the request of the second workshop group although the Corps had recommended its elimination.¹⁴ Thus three of the twelve alternatives proposed were in North Carolina. Citizen concern in Southside, which had diminished when the Public Service Authority withdrew their permit request from the Wilmington Corps, now intensified again, but opposition became more organized and other groups became involved.

Greensville County, located next to Brunswick, now proposed further withdrawals from the Nottoway River--particularly by Georgia-Pacific, which already had a permit from the Water Control Board to withdraw one mgd. Georgia-Pacific anticipated that their withdrawals would double in a year. The county itself considered entering the water business by furnishing water from the Nottoway to attract new industry to the county--and anticipated the need for 1 to 1.5 mgd within 15 years. These proposed withdrawals brought forth strong objections from the Public Service Authority to the Water Control Board.^{18,19}

As such water conflicts became more prevalent in the state, the 1977 Virginia General Assembly created yet

another commission to study water supply and allocation problems in the state, particularly in the northeast and southeast regions. The State Water Study Commission was organized to assist the Water Control Board in an advisory capacity in resolving problems and drafting legislation required for implementation of their recommendations, including an analysis of the laws, doctrines and policies that would influence the implementation of a statewide water resource management plan (particularly with reference to the limitations imposed by the riparian doctrine). The work was to be completed and a report submitted by December 1, 1977. (This was not done.)

The Commission was formed because of increasing concern that no proposals were being initiated to alleviate anticipated shortages. A Joint Legislative Audit and Review Commission study had found that nearly two million residents of northern and southeastern Virginia faced potentially severe water supply shortages by 1980, and anticipated water problems were also identified by other water resource agencies in the state. As the Water Control Board had not recommended alternatives to alleviate the anticipated shortages, in spite of funding provided them for this purpose, the Commission was formed to provide legislative guidance to the Board and to assist them in holding public hearings throughout the state. The Commission consists of

nine appointees; six from the General Assembly, two from the state as a whole, and one from the Water Control Board--in this case, the member from Suffolk. In addition to focusing on water supply problems in the northeast and southeast, a third major area of study was to be an analysis of legal problems regarding water supply and allocation in the state.²⁰

The Commission met with the Norfolk Corps of Engineers in July 1977 and decided to wait for the Corps' report before conducting their own study of the area and making any recommendations.

Meanwhile, back in Southside various local government officials met with the Corps in July to discuss the Gaston and Kerr Lake alternatives and consider four specific areas of concern. Their first question concerned demand projections. The Corps projected that the Tidewater area would need 70 to 75 mgd by the year 2030, while the Public Service Authority estimated that 40 to 50 mgd would be needed. Southside officials estimated that the Corps projections would require a 170 percent increase in per capita consumption and noted that the Corps had used the same data as the engineering firm who conducted the Public Service Authority's study. These population projections in turn varied from those used by planning agencies throughout the state. The Southside group opposed such large

withdrawals on the grounds that it would set a dangerous precedent, proposing as an alternative desalinization as the only feasible long range solution.

Their second question concerned cost estimates. Corps' figures for the three alternatives of interest to the group were \$222.3 million for construction of an adequate plant to desalt ocean water, \$280.4 million for withdrawal from Kerr Reservoir and \$211.8 million for Gaston Lake withdrawal. Annual operating costs were high--\$11.4 million for Gaston, \$14.5 for Kerr and \$23.8 for desalinization. Southside officials contended that technological advances by 2030 would more than offset the anticipated high costs of desalinization.

The third question concerned environmental considerations. The Corps had stated that a buffer zone around any water intake structure in either lake would not be required. Officials felt that State Health Department regulations would prohibit boating and other recreational activities within a certain distance of the intake structure.

Their fourth question concerned who would build and maintain the facilities. They stated that if a local water authority constructed the facilities, they would have to obtain consent from the county in which the system was located; however, if the Corps constructed them, federal law

would supercede state law and consent would not be required. The group felt that until these and other questions were answered satisfactorily, opposition to the proposal would continue.¹³

On September 30, 1977 the Corps announced their selection of the four alternatives selected. These were (1) Roanoke River withdrawal in North Carolina, (2) withdrawal from the Chowan in North Carolina, (3) Blackwater River impoundments (with a pumping station on the Nottoway), and (4) construction of Lake Genito with additional water purchased from the Appomattox Water Authority.²¹

After the four final alternatives were made public, the Water Control Board member from Suffolk who served on the Water Study Commission contacted the Board and voiced his opinion regarding these alternatives. He stated that he felt that Lake Genito was unacceptable, as the City of Richmond would need the Appomattox and James River waters; that Chowan withdrawal was unacceptable both because of interstate problems and because Union Camp discharges wastes into the river above the proposed withdrawal site; and finally that the Pea Hill Creek alternative should be reinstated into the list of final alternatives. The Board assured him that these opinions would be noted in the report prepared for the next joint meeting on November 30. (This information was obtained by Southside officials in January

1978 under a Freedom of Information Act request.)²²

On November 21, 1977 the Corps held its third public hearing in Roanoke Rapids, North Carolina to discuss the four sites selected. At that time the Corps distributed its "Description of Alternatives" of both the four that had been selected and the eight that were eliminated. Estimated costs covered amortization of all capital expenditures over a 50-year period at a 6 and 3/8 percent interest rate plus operation, maintenance and administration expenses. The Corps made the point that the four selected alternatives were tentative and could be modified by input from the workshop in October, the Roanoke Rapids public hearing, and information from other state and federal agencies that might be received. Given this qualification, the Corps gave the reasons for their decisions.

1. The Roanoke River withdrawal in North Carolina would require less pipeline construction and cause less hydroelectric power production loss.
2. The Chowan, North Carolina withdrawal was the least costly and would require the least pipeline construction.
3. Blackwater Impoundments were most compatible with the existing water supply systems and all construction would be within the boundaries of the Public Service Authority.

4. Lake Genito would limit impacts to one state, treatment would be at the source and no impoundment would be required initially.

All four alternatives could provide sufficient water for both local and Southside demand at minimum flow conditions in the year 2030.

The Corps eliminated the other Roanoke River Basin alternatives, including Pea Hill Creek, because they would result in longer pipeline construction and greater hydroelectric loss than alternative (1).¹⁷ Desalinization was eliminated because of large power requirements--1,111,000 tons of coal would be required annually to produce 71 mgd of water. Electrical power requirements would be 153 million kwh. They expanded upon the adverse considerations regarding this process as desalinization was the long-range alternative Southside favored: plant reliability is poor, some plants down as much as 50 percent of the time; operating costs may be excessive; and the reverse osmosis process that requires less energy may cost as much as \$10 per thousand gallons when used to desalt seawater. The James River estuary could be a source of brackish water; however, Kepone and other contaminants made this alternative infeasible,¹⁴

Upon presentation of Corps information, interest groups presented their views. The Roanoke River Basin Association

expressed concern that this might set a precedent and be the first in a series of withdrawals that would then more seriously affect the area. The question was raised as to whether pipeline capacity would be limited to 75 mgd or whether in fact it would be built in anticipation of much larger use. Corps figures indicated that a withdrawal of 150 mgd would drop the level of Kerr by .08 foot, while 500 mgd would cause a 3.4 foot drop. While water quantity appeared ample for both Southside and Tidewater for a 75 mgd withdrawal, there was no such assurance if withdrawals were greater. The Association also stated that it felt that a complete Environmental Impact Statement should be required before a decision was made.²³

The Brunswick County Administrator echoed concern for the economic effects on Southside, stating that the natural resources of an area should be used to promote the growth and development of that area, rather than awarding uncontrolled overdevelopment in another.²⁴

By far the greatest opposition was expressed by North Carolina. The Town of Halifax suggested that the Public Service Authority clean up the rivers and streams in its own area and use these as water sources. North Carolina speakers advocated limits to growth in the Hampton Roads area, rather than taking more water that would reduce flows, damage water quality, harm fish and wildlife and stifle

development in North Carolina. As the Weldon, North Carolina mayor expressed it, "God in his infinite wisdom had the water flow down from the mountains to Weldon. If he had wanted it to go to Norfolk, he would have done it that way."²⁵

Governor Hunt of North Carolina sent a statement via his deputy secretary of natural resources, warning that North Carolina would use "every lawful means at our disposal to prevent the implementation of any of the proposals" (the three proposals that would affect North Carolina; the Roanoke, Chowan and Blackwater alternatives). He added..."we will oppose the construction of any intake on any North Carolina streams, or any other stream, that may adversely affect stream flows or water quality in North Carolina or that is in violation of the riparian rights doctrine...all three alternatives constitute an unreasonable use in violation of this common law doctrine, and are furthermore unreasonable in view of their effects upon lower riparian owners in North Carolina...such withdrawals would increase wastewater treatment costs for our citizens, damage commercial and recreational fishing and disrupt ecological systems already in delicate balance...I am urging all riparian owners along the Roanoke and Chowan Rivers to join us in bringing legal action in the event an attempt is made to implement any of these alternatives." North Carolina

Congressional representatives echoed the governor's opposition.²⁶

The Virginia State Water Control Board's position was expressed at the hearing by the head of its quantity section. It should be noted that the Board's responsibility has been with regard to quality--with no legislative authority to regulate except insofar as it related to quality.¹² The proportion of the agency staff involved in quantity aspects was relatively small. The statement was issued with the qualification that it represented only the views of the staff of the Board--and not those of either the Board or the Water Study Commission. It then supported the Blackwater Impoundments as a viable alternative and recommended that the Pea Hill Creek alternative should be reinstated, as it involved withdrawal from a regulated stream with an abundant yield and no impoundment would be needed.²⁷

This statement raised concerns again in Southside and North Carolina. The recreation and tourism planner of the Kerr-Tar Regional Council of Governments in North Carolina worried that if the four alternatives proved infeasible, they would again consider Gaston Lake, particularly because both Gaston and Kerr were rated among the best reservoirs in the eastern U.S. in water quality. He expressed hope that the North Carolina governor would strongly defend the lakes

as well as the rivers because of the impact that withdrawal would have on their recreation potential.²⁰

On November 23, two days after the Roanoke Rapids public meeting, the Study Commission submitted a report to the governor and General Assembly regarding the proposal as well as other water-related matters. The report stated that "the State Water Control Board staff, acting on behalf of its Commission member, requested that the Corps retain a fifth alternative for study, that of Pea Hill Creek. And on November 30 the Board met jointly with the Commission and endorsed unanimously the Commission's draft report containing its recommendations (which included the Pea Hill Creek proposal).²⁰

This sequence of events roused substantial protest in Southside. The region wanted to know how and why Pea Hill Creek was back in the picture. The Southside Planning Commission requested a copy of the minutes of this November 30 meeting, and upon learning of the manner in which the Pea Hill alternative had be repropoed, both the Planning Commission and Brunswick County protested. The Board minutes showed that the Board and Commission jointly had recomended that groundwater supplies be evaluated and possible interconnections between existing facilities in the Hampton Roads area be explored as ways to help alleviate the situation, but there was no mention of Pea Hill Creek in the

minutes.²⁹

On December 16 the Brunswick County Administrator was notified that the Water Control Board had officially requested the Corps of Engineers to reestablish Pea Hill Creek as a viable alternative. He immediately began to organize support for opposition to this move. A letter was written to Governor Hunt, soliciting North Carolina's support and presenting Brunswick County's arguments; namely that there would be adverse environmental and economic effects on both the County and the Lake as a whole, that natural resources should be the limiting factor in the development of any area and further that development in Tidewater should not be supported by Southside resources, that the Board had no authority to redirect a study that had been directed by the U.S. Congress, and that the Lake Genito alternative was the only viable one, as it was the only one within the James River Basin.³⁰ This was followed by a letter to the Corps, protesting the manner in which Pea Hill Creek had been reintroduced into the study; that it was contradictory to the stated intent of limiting in-depth analysis to four final alternatives, and that by responding to the request of a single individual representing a state agency the Corps had bypassed substantial public opinion.²⁶

The South Hill Delegate to the General Assembly wrote directly to the Water Control Board Chairman expressing his

disappointment and frustration that after two years of work, when the Pea Hill Creek alternative finally was no longer under consideration as a possible water source, the Corps of Engineers on December 22, 1977 had officially added it again to the list of alternatives because of Board action. The Delegate noted that every political subdivision in the area had gone on record as opposing the withdrawal, joined by every agency and many civic organizations. He further stated that upon investigation of the joint meeting on November 30 he found that at no time was it brought to the attention of the Board that the staff report presented for approval included the Lake Gaston withdrawal proposal and that at least part of the Board was not aware that they were voting on the issue when the report was unanimously approved. He then asked for a reversal of the decision.³¹

In response to this request and a similar one from Brunswick County on January 12 a meeting was held with representatives of the Southside Planning Commission, the Brunswick County Administrator, and the Water Board, at which the Southside representatives expressed their opinion that the Board and Commission had exceeded their authority by asking the Corps to add a fifth alternative, as their duty as expressed in their legislative mandate was to report only to the General Assembly and the governor. After consideration of this charge, the Board decided to conduct a

letter ballot, explaining the situation to their members and asking what they wanted done. As a result of this vote, in March the Board wrote a letter to the Corps stating that the Board's request to include the Pea Hill Creek alternative should not be interpreted in any manner as an endorsement of that as the preferred alternative.^{32,33}

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Meanwhile, the Brunswick County Administrator, still unsatisfied, wrote the Corps on December 30 and again on January 16 after receiving no reply to his previous letter, stating Southside's opinion that the Board and the Commission had exceeded their authority and requesting that the Pea Hill Creek alternative be deleted. As there was still no reply, he and the Director of the Southside Planning Commission went to the Chief of the Corps in Washington, D.C. on January 24, after notifying the Norfolk Corps by mailgram on that date. By letter dated January 25 the District Engineer in Norfolk responded, stating that the study had been guided by broadly-based input from its beginning, and that the Corps would continue to consider input from all concerned sources. He further pointed out that as a result of input from the second workshop, the Corps' recommended list of eleven alternatives had been increased to twelve with the inclusion of the desalinization alternative. He therefore believed that the addition now of

a fifth alternative was warranted, because although they had hoped that the list would be less than five by this time, there was no way of knowing that at the beginning of the study.

The Southside Planning Commission Director and the County Administrator also received no satisfaction from the Chief of the Corps in D.C. who declined to interfere in an on-going study. Nevertheless, opposition intensified. The Town of Clarksville passed a second resolution opposing Gaston withdrawal; Governor Hunt wrote the Kerr-Tarr Council that he felt that the addition of the fifth alternative after the public had been informed that only four were under consideration was inconsistent with meaningful public participation in decision-making; Brunswick County appropriated \$15,000 to be used to fight the proposal; the Brunswick and Mecklenburg Counties' Boards of Supervisors jointly agreed to continue support of opposition; and representatives of the counties and the Southside Planning Commission met with the Kerr-Tar Council to develop strategy and formalize opposition. The group also met with the deputy secretary of Natural Resources and Economic Development for North Carolina to notify them of the status of the proposal.¹⁷

At the other end of the proposed pipeline, the Public Service Authority's administrative officer stated that while

the Blackwater/Nottoway Rivers alternative was their first choice, Lake Gaston was their second. He also said that if they followed the Corps' regulations, it would take 12 to 18 years before water would be available to Tidewater, and the area couldn't wait that long. Therefore, instead of waiting for the Corps to get the water source approved through Congress, the Authority planned to obtain a Corps permit and pursue the project itself.³⁴ To this end, the Authority adopted a resolution supporting proposed legislation in the General Assembly that would permit interbasin transfer of water, and would specifically allow the Authority to withdraw water from Lake Gaston. This legislation was introduced and defeated.³⁵

The opposition now began to focus its efforts on collecting data to support its opposition. Its two main arguments against withdrawal concerned the legality of such a proposal and its economic and environmental impacts on Southside. Accordingly, Brunswick County and the Southside Planning Commission commissioned a \$10,000 economic impact analysis of the Pea Hill Creek withdrawal, using funds obtained from a grant from the Coastal Plains Regional Commission. The legality of inter-basin transfer was analyzed not only by interested Southside parties,³⁶ but also by the Environmental Law Commission of the Young Lawyers Section of the Virginia Bar Association for the

Water Study Commission. This study was concerned with determining whether riparian owners would have to be compensated for their loss of rights. They concluded that Virginia would have to exercise its power of eminent domain and riparian owners could seek just compensation for damages; however, provable damages might be nominal. (While at present no agency in the state can authorize an inter-basin transfer of water, the Virginia Constitution authorizes the General Assembly to enact legislation to implement the Commonwealth's natural resource policy.)³⁷

Brunswick County was also concerned with exploring the extent of its rights. Its lawyers commissioned a research group to determine specific ordinances that would be legal with regard to the withdrawal. Under consideration were: (1) the imposition of a severance tax on removal of natural resources from the county; (2) prohibiting construction of any facilities that would remove all natural resources without Board of Supervisors' consent; and (3) prohibiting removal of all natural resources without consent. The legal opinion was that none of these would be defensible. The County nevertheless drew up a Natural Resources Management Policy to ensure that management of the county's resources would benefit all its citizens.³⁸

Support was solicited from the National Democratic Committee, arguing against federal tax monies being used for

construction, maintenance and operation expenses through the Corps of Engineers; from the Sierra Club, arguing against uncontrolled growth; and from all Roanoke River Basin residents, citing both these arguments as well as the cost of depletion of Southside resources to the region.

Southside also attempted to get answers to specific questions that they could not obtain from the Corps. In particular, concerning the buffer zone that might be required around the intake structure, the State Department of Health stated that it was felt that none would be required.³⁹ The question of the life expectancy of Kerr and Gaston Lakes and jurisdictional questions were addressed to the Wilmington Corps of Engineer, managers of Kerr. They stated that neither sediment nor nutrient buildup was a problem in either lake and their life expectancies were projected at more than 600 years. Kerr is managed for flood control, power generation, recreation, water supply and water quality. However, if at any time the need for one specific use would exceed that of the others; for example if the need for a water supply would exceed that for hydropower, the Corps would request authority from the Congress to review project operation. Specifically, the federal government is subject to state riparian law with regard to riparian rights.⁴⁰

The Norfolks Corps was also attempting to gather data,

and contacted both Kerr-Tar and the Southside Planning Commission, requesting data on water needs in their respective areas. Both agencies responded that water needs were substantial--but that the information needed would have to be obtained from a comprehensive water resources study of the entire Roanoke River Basin, and not just one region. They added that in view of the fact that in-depth studies had been made of the Tidewater area, it was equally important that such studies be made of the Basin. The Corps, however, used demand data projections supplied by the State Water Control Board.⁴¹

On March 22 the Corps issued a public statement concerning the study. It announced that it was considering another alternative for the Blackwater-Nottoway Rivers--a storage impoundment on Assamoosick Swamp and withdrawals from the Nottoway River. At the same time it stated that because of legal and institutional considerations it was no longer considering withdrawals from the Roanoke and Chowan Rivers in North Carolina. The study was back to four alternatives; the above-mentioned Nottoway pumping with storage on the swamp, Nottoway pumping with Blackwater storage impoundments, Pea Hill Creek, and Lake Genito construction with water purchased from the Appomattox River Water Authority.⁴²

In April, 1978 the Virginia Water Resources Research

Center at Virginia Tech published a study entitled "Expanded Alternatives for Water Supply in Southeastern Virginia", funded by the Department of Interior Office of Water Research and Technology. This was a preliminary report to assess the institutional impediments to implementation of alternative solutions and to document their costs. The report stated that by utilizing existing groundwater resources (establishing a system of deep wells that would provide an additional 10 mgd) and by connecting the Portsmouth and Norfolk systems to utilize the existing surplus in the Portsmouth system "substantial savings can be achieved by postponing investment in relatively costly facilities such as those proposed by the Corps of Engineers study. Relatively small increases in groundwater use and utilization of current supplies through regional cooperation could meet projected demand and result in cost savings."³ This report appeared to have no effect on the study.

The last workshop was held May 26, 1978 and Brunswick County issued a statement at that time concerning its opinion of the manner in which the study had been conducted.

We have been ignored in the study process...The news media has provided more factual information to us than has the Corps of Engineers...It appears that this study, through a tangled web of omissions, obscurity and politics has been conducted from one end of the pipeline only, with direction provided solely by the Virginia State Water Control Board as necessary, to ensure that the Lake Gaston alternative which was preselected by that Agency came out on top,

regardless of cost or impact.

The statement went on to say that Brunswick County would initiate all lawful means to prevent such a proposal, should Pea Hill Creek be the alternative chosen. This seemed likely, as the Corps announced at the workshop that the Blackwater/Nottoway River complex was the habitat for the red-cockaded woodpecker and thus could not be considered further.⁴³

Questions asked at the workshop were responded to by the Corps in a June letter to the Southside Planning District Commission. Statements of interest included:

- 1) The Corps would probably construct the project and the Public Service Authority would operate and maintain it.
- 2) An Environmental Impact Statement would accompany the final recommendation by the District Engineer to the Division Engineer.
- 3) The study was based on Public Service Authority projections that Tidewater population would increase by 25 percent by the year 2000.

Corps' economic and environmental impact figures had also been questioned, and the Southside Planning District officially requested more specific information from the agency--in particular a draft EIS. It requested a 30-day delay in the public meeting scheduled for June 12 so that

the public could review pertinent documents. However, the Corps responded that information would not be available until after the meeting and the Draft EIS would be forwarded to the Division Engineer. The Corps also took issue with the Planning District's charge that the Corps had been "persuaded by the staff of the Water Control Board". The District Engineer stated that he had never met with the State Water Control Board during the course of the study.⁴⁴

On June 23 the final public meeting was held in Emporia with over 300 people present. At this time the Southside Planning Commission submitted a statement concerning their feelings about the study.

The Norfolk Corps has repeatedly ignored the concerns of our area regarding the effects on future development around Kerr Lake and Lake Gaston...the Corps has taken a lackadaisical attitude about the environmental effects of the proposal...The Norfolk Corps has repeatedly refused to cooperate with local officials and agencies trying to obtain answers to concerns...Technical questions are referred to engineering studies that will be done in the future...From the beginning of the study the Corps has shown that their only real concern is meeting a July 1, 1978 deadline for having a report ready for Congress, at all costs...The citizen participation portion of the study has been a joke...The Corps also refused to consider the (VPI) report.⁴⁵

The Southeastern Virginia Planning District Commission and the Southeastern Public Service Authority made a joint statement.

...in 1969, the Southeastern Virginia Planning District Commission began its initial

study of this region's water supply problems. By 1975, not less than five studies had been completed by this agency alone...Of those done by the Planning Commission, virtually all were explicit in identifying the Blackwater/Nottoway basin as the best source of water to meet our most pressing needs. Each of those reports were provided to the appropriate regulatory agencies for review and comment, including the Corps of Engineers, the State Water Control Board, Federal environmental agencies, as well as officials from North Carolina. At no time were we advised of specifically quantified problems with the proposed use of the Blackwater and Nottoway Rivers.

In late April of this year, the State Water Control Board reached a conclusion that no more water could be withdrawn from the Blackwater/Nottoway Basins. The development of this conclusion was completed without any opportunity by the Authority to review or comment. To our knowledge, no effort was made to evaluate any positive impacts the Blackwater/Nottoway complex alternatives might have on the basin's water quality.

Both the Planning Commission and the Authority at their respective May meetings have urged that the final plan document not be drafted by the Corps of Engineers and submitted to higher headquarters until such time as the data, information and models utilized by the Water Control Board and Corps (to come to the conclusion that the Blackwater/Nottoway Complex would not be suitable under any circumstances) are made available for our review.

It is very difficult for us to come to workshops or this Public Meeting and provide informed comment on your conclusions, when we have not had access to the data upon which your conclusions are based...The localities in Southeastern Virginia have spent over \$300,000 on water studies, all of which have been made available in their entirety to state and federal agencies for their review over the last nine years. With this in mind, we believe that to be allowed a month or two to review the Corps of Engineers and Water Control Board data is not an unreasonable request on our part.⁷

All three regional agencies and the local government involved in the issue questioned the manner in which the study had been conducted by the Corps as well as the conclusions it had reached.

The Corps then announced its present position, stating that studies completed by the Water Control Board since the March 22 announcement of the four alternatives indicated that sufficient flow was not available in the Nottoway and Blackwater Rivers to meet the needs of Tidewater because of "previous water resource allocations". The May 27, 1978 edition of the Norfolk Virginia-Pilot was more specific: "The Roanoke and Chowan Rivers were dropped after Governor Jim Hunt of North Carolina threatened legal action if either was selected, and the Blackwater and Nottoway Rivers were eliminated after it was revealed that their waters were previously allocated under a state permit to Union Camp Corporation of Franklin."

The paper had elaborated on the Blackwater/Nottoway alternative in its May 21, 1978 editorial. It praised the Planning Commission for advocating this alternative and cited several reasons why Lake Gaston was undesirable: (1) it would be expensive, and (2) both North Carolina and the Roanoke River Basin Association (an environmentalist group of 250 members) would fight it. On the other hand, the Nottoway and Blackwater Rivers were both near Tidewater,

merging to form the Chowan in North Carolina, and Southampton County, where they are located, welcomed impoundment of Nottoway water. The problem is that Union Camp Corporation is permitted to discharge treated waste water from settling ponds at its Franklin paper mill into the Blackwater from December 1 to March 30. At that time water levels are high and the river can assimilate the nutrient-rich effluent. If Nottoway waters are impounded, the oxygen content of the Chowan could be reduced, which could kill fish and vegetation. It already showed these characteristics, with spreading algae, and North Carolina officials suspected that was attributable at least in part to Union Camp's discharge. The Union Camp permit, issued in 1974, was to be renewed in several months. The paper stated that the Planning Commission would meet with Union Camp, the State Water Control Board and the Corps of Engineers to discuss possible cost-effectiveness arrangements so that the Nottoway/Blackwater River Basin could serve both current and future users. It encouraged the study of methods to decrease the effluent effect so that the rivers could be a source of water for Tidewater.

Nevertheless, the Corps stated that there were only two remaining alternatives--Appomattox/Lake Genitc and Pea Hill Creek, and announced that Lake Gaston was the one the Corps would tentatively recommend. This would involve

construction of two 48-inch transmission lines capable of handling 150 mgd at a cost of \$14,812,000 annually over a period of 50 years.

Three days after the hearing, on June 15, the Public Service Authority held a special meeting with representatives of the Corps and Union Camp Corporation. Southeastern Virginia's main concern was the cost of the Pea Hill Creek alternative. The meeting was being held to obtain the assurance of local cooperation from Tidewater governments, as they would be assuming these costs--estimated by the Corps to be \$56 per thousand gallons in the first year, and decreasing to \$1.02 in the twenty-third year. "The Corps has to know that they do have some indication from the local governments of the agency they are dealing with that the feds will have repayment of these investment costs."⁴⁶

The Chairman expressed the Authority's concern that no one had proved that the material that the Authority had presented to everybody was not implementable. "We had to produce facts and figures to justify our position. Now the Water Control Board can say without presenting any facts and figures that we don't have a viable solution. I think it places the burden on the Board to show us why. In talking to...the Board, the only thing they plugged into their model was the 70 mgd. They can't tell us that we can't get 40 mgd

or 60 mgd, or a lesser amount than the 70 mgd. I don't think it is fair to this Authority or to the taxpayers who funded our study to have the Board fighting us by protecting their background information by saying that we cannot give it to you because it belongs to someone else."

The Union Camp representative indicated that their company had a secrecy agreement with the Board to protect their data and model. The Chairman felt, however, if the Board used that data it should be made available under the Freedom of Information Act, and if that were not the case, the Board should have developed their own model.

The District Engineer stated that while opposition to the project from Southside at the public meeting had been strong, it was expected and could be overcome. But Tidewater would have to support it or the institutional and legal problems would make the proposal impossible to implement. He stated that he was asking the local communities for their support, and he would ask Governor Dalton for his position on support for interbasin transfer. If he got neither of these he would submit a negative report and the federal government would wash their hands of the matter.

He maintained that he didn't have to present data concerning the Blackwater/Nottoway water supply; that if the State Water Control Board said there was no water he would

accept that. "The Corps is at the point in time right now where we are going to wrap up this study, there is no point in studying this problem to death...if we wait until next summer and leave this study on the shelf it is going to be a dead issue, the federal government is not going to get involved anymore...I am strong on the fact I will close our study up one way or the other. I cannot see any merit in waiting another thirty days to examine the State's or Union Camp's model."

Thus Tidewater governments were also not given much opportunity for changing the plan, and on June 28 the Public Service Authority formally notified the Corps that it supported the Corps' selection of Lake Gaston as a Corps project with a national perspective, with the understanding that the Authority, under its more limited scope, would continue to explore other more expedient alternatives. It requested the Corps to "fully pursue its selection of Lake Gaston."⁴⁷

The issue now entered its third stage with the conflict more clearly delineated. The Southside Planning Commission let a further \$35,000 contract for a full study of the potential uses of Lake Gaston, together with a concurrent development program. In conjunction with the study, the Lake Gaston Economic Study Subcommittee of the Southside Planning District Commission, an advisory board of citizens,

was formed.

While the governors of Virginia and North Carolina reactivated the bi-state water commission, North Carolina continued to firmly oppose Lake Gaston water withdrawal, with the North Carolina Secretary of Natural Resources and Community Development suggesting that Virginia clean up the James River to solve water needs in Tidewater. North Carolina Congressional representatives also maintained their opposition with the North Carolina Senator stated: "I shall remain strongly and unequivocally opposed to any interbasin transfer of North Carolina's water and I intend to do anything I can to prevent it."⁴⁸ Governor Dalton of Virginia endorsed the proposal with the understanding that both states would pursue other alternatives in solving southeastern Virginia's water problems; one of the bi-state commission's mandates being to develop "suitable arrangements for sharing the water supply of interstate waters without adverse effects on the citizens of either state."⁴⁹ The Gaston Lake alternative was also backed by the interstate committee, as proposed by Virginia's Secretary of Natural Resources, with water treatment at the source, however, rather than in Tidewater, so that the water would be available for the use of both states.^{50, 51 51}

Southside agencies again tried to obtain data from the Corps after a new District Engineer took over; however, he

notified them that there were no documents that would be available for review, other than the transcripts of public meetings and material furnished to workshop members. He stated that his report would be available to interested parties after review by higher authorities, but meanwhile both he and his staff would be happy to discuss the study itself.⁵²

On August 21, 1978 he announced that the Lake Gaston proposal was the more desirable of the only two remaining alternatives, as it would not require a major impoundment. He therefore planned to recommend it as the future source of a water supply for Tidewater. The initial study was completed.

Southside opposition now began the process of intensive organization and mobilization of resources. On August 23, the Roanoke River Basin Association announced its intention to serve as a coordinating agency to lead opposition at a public meeting in Gasburg, where about 85 North Carolina and Virginia citizens gathered to discuss plans. The Association announced a three-point plan to (1) obtain legal assistance, (2) obtain engineering/economic data, and (3) use a public relations firm to advertise a campaign in both states, but primarily in Tidewater. As both Jesse Fowler, the Brunswick County Administrator, and Mr. Delbridge expressed it, they needed to know when to react and how, so

that neither ammunition nor resources were wasted. Among the fund-raising efforts was a \$10 per plate dinner held at Delbridge's in October at which \$3,000 was raised. The money was to be used to hire lawyers at both the state and federal levels. A public relations firm in Richmond was hired to draw up an action plan that was both comprehensive and specific; meanwhile the studies commissioned by the Planning Commission were completed so that Southside finally had some data upon which to base their statements.

The other major private organization intensively involved in the issue was the Virginia BASS federation, representing 13,000 fresh water sport fishermen in the state. It offered its full support, citing both fears of the impacts of the withdrawal on water quality and fish populations as well as the setting of a precedent that would encourage further withdrawals for other areas. It also expressed concern for increased pollution in the areas that would receive the water and announced that it would encourage development of a desalinization plant in Virginia Beach.⁵³

In December, 1978 the Interior Department announced that it had selected Virginia Beach as the site of a federally subsidized brackish water desalinization plant. It announced that it would invest an estimated \$4 million in a plant capable of desalting at least two million gallons of

brackish water a day. The city would design, construct and operate the plant under a federal contract that specified that the city would pay ten percent of construction costs and then would inherit the plant after a three-year demonstration period. Construction should begin by 1980 and water production could begin by late 1982.

1979

In the 1979 General Assembly two bills were introduced to authorize interbasin transfer of water and water allocation procedures. Both were defeated.

The March 1979 issue of Water News, published by the Virginia Water Resources Research Center at Virginia Tech, ran the following article:

The State Water Study Commission, which is due to make final recommendations to the General Assembly in 1980, has published an interim report indicating that southeastern Virginia may be capable of fulfilling its own future needs. In January the U.S. Army Corps of Engineers had recommended that the area look to Lake Gaston as a source of water. The Study Commission's report is based on a year-long study of groundwater availability in an area that includes cities and counties south of the James River, west of the ocean and east of Prince George County. The study says that the area could safely pump twice as much water from the ground than is now permitted by the state (88 mgd).

The Corps recommendation, which says that Tidewater will need to increase its water supply by 70 mgd by the year 2030, involves a multimillion-dollar proposal to pump water from Lake Gaston on the Virginia-North Carolina border. Such a solution has been repeatedly and vociferously opposed by North Carolinians and by partisans who do not want water taken from the

Roanoke River basin. This would involve interbasin transfer, a controversial subject in the 1979 Virginia General Assembly, where two bills that would have allowed such transfer were killed in committee but are still under consideration by the Commission and likely will reappear in 1980.

The District Corps recommendation was forwarded to the Division Corps in New York. From there it will go to the Chief in D.C. who will solicit the views of both Virginia and North Carolina governors, as well as the heads of water control agencies in both states before forwarding his findings to the Secretary of the Army and the Office of Management and Budget. The next step is the U.S. Senate Public Works Committee and finally, Congress.⁵⁴

However, this may not be necessary. The July 1979

Water News reported:

As suggested by a State Water Study Commission interim report a few months ago, the Tidewater area could be sitting on the most likely answer to southeastern Virginia's long-range water supply problem. One of the nation's foremost groundwater engineering consulting firms, in a geological study for the Commission, concludes that tapping Tidewater's underground water supplies could easily allow the region to double its withdrawal rate without endangering the natural supply. The report states that there are 120 billion gallons of fresh water in the ground within the area (approximately 3,000 square miles), and it is being replaced by rainfall faster than it is being used.

The study area covered the counties of Surry, Sussex, Isle of Wight, Prince George and Southampton, and the cities of Virginia Beach, Norfolk, Chesapeake, Portsmouth, Suffolk, Franklin and Hopewell--a total population of slightly less than one million people. Regional officials for

at least a decade have been seeking solutions to the projected water supply problem (an additional 70 million gallons a day by the year 2030) for the rapidly growing region. If the latest report is accepted, it will substantially change the course of on-going probes and will cool the heated controversy that has developed over previous proposals to pipe water from far-removed points, such as Lake Gaston.

This would appear to verify the initial Virginia Tech research report of April 1978. Meanwhile, Southside Virginia is preparing its offense and biding its time.

Summary

This case illustrates the bureaucratic maze that now exists in the field of land use and resource allocation. Political constraints play an important role in many land use cases, and this is one example. Political power in a state rests in its large population centers. However, rural areas are becoming increasingly protective of their natural resources, and are unwilling to have them exported to increase the economic status or power structure of another region. This brings up the "limits to growth" issue--one that is unresolved here as well as elsewhere.

In this case, however, the two regions were not adversaries. To the contrary, both were in conflict with the Corps of Engineers, a federal agency. Both objected to being excluded--to a degree--from the study process, and in particular they objected to their lack of access to the data upon which the Corps based its decisions. This secrecy

contributed greatly to the conflict.

Another adversary in the case was the state of North Carolina, also protective of its resources. Interbasin water transfer would be a major factor in the case if the Gaston Lake withdrawal was approved. Under the common law riparian doctrine of the East, such withdrawals are illegal. While they do exist to a degree within states, if another state challenged such a proposal, it would end up in the courts and the decision would have far-reaching consequences.

Recent research findings indicate that it is likely that in this case it will not be necessary to test the law. However, as population continues to increase in over-developed areas with insufficient supplies of water, it is likely that the question of interbasin water transfers will have to be settled.

Analysis of the Variables

The primary variables in this case are: (1) taxation and law, (2) economic system, (3) resource management, and (4) interest groups and their communications.

Secondary variables are (1) environmental factors, (2) transportation system, (3) value system and (4) land tenure.

There are no negligible variables.

Taxation and law

This variable is a major factor in the issue, as the proposed interbasin water transfer is in conflict with the

common law doctrine of riparian rights that Virginia adheres to, as opposed to the doctrine of prior appropriation commonly found in the water-short West.

The doctrine of riparian rights establishes two fundamental limitations on water use: (1) the use must be on riparian land and (2) the use must be reasonable. To be considered riparian, land must be in physical contact with the stream and its maximum boundary is the stream's watershed. The right of action under the reasonable use theory does not arise unless actual injury occurs.

Although the riparian doctrine requires use on riparian lands, this principle has been modified to allow use on non-riparian land in the absence of injury to riparian owners. The question of injury is thus the key issue in determining the legal status of interbasin water transfer.

Virginia has traditionally had a surplus of water and thus water supply has not been a problem. The State Water Control Board's authority has been limited to quality considerations, and any supply allocations have been made on that basis. There are no quantity allocation procedures at present in the state.

No agency has authority to determine the legal status of a proposed diversion. However, the approval of several federal, state and local entities is required although none constitutes authorization; therefore, there are several

potentials for project prohibition. The principal local constraint is that the consent of the political subdivision where the supply project will be located is required, although there is a provision of appeal to a special three-judge appointed court where consent is denied.

Any allocative jurisdiction would have to be authorized by the General Assembly, and as there has been very little precedent-setting case law in the state, the legality of such designation of authority is sure to be challenged in the courts.⁵⁵

If the proposal is implemented, jurisdiction over the creek is a major concern of not only the owner of Delbridge's, but other landowners in the vicinity. The Code of Virginia grants counties, cities and towns jurisdiction for five miles upstream of a water supply intake to prevent pollution and injury to waterworks. The Virginia Department of Health also has the power to enforce state regulations that pertain to protection of water supply impoundments. This could mean that the Southeastern Public Service Authority would have jurisdictional control from the bridge five miles upstream, including the marina, and development along the creek could be curtailed.¹⁸

Economic system

The proposal will result in costs to both regions in the form of financial benefits foregone to Southside and

actual costs to Tidewater. Southside feels strongly that Lake Gaston is its major economic asset and that any proposal that affects that asset will adversely affect the economic status of the region. While the Corps states that the proposed withdrawal will lower the lake's water level by only 1/16 inch, the region's main concern is that once a precedent is set and interbasin water transfer is legally authorized, Lake Gaston will be proposed as a water source for any metropolitan district in either Carolina or Virginia in need of a good water supply.

Concern is also expressed that use restrictions may be imposed to protect the quality of water for Tidewater consumers, and this might reduce the attractiveness of the lake to recreationists as well as land purchasers. Real property values in the magisterial districts in the southern end of Brunswick County have increased by a factor of 3.7 since the lake was constructed in 1962.

The fishing tournaments, in particular, are a major source of outside income for the area. A recent tournament at Delbridge's drew 250 entrants and a crowd of about 3,000 attended the final day of the contest. A local retail businessman conservatively estimated that the tournament was worth over \$100,000 to the Gasburg community. This was in spite of the fact that there are no overnight accommodations in the area.

It is estimated that while specific economic impacts of the proposal are minimal, long-term effects may be substantial. By affecting the attractiveness of the creek there would be negative economic effects in terms of development opportunities foregone. The lake is characterized primarily by second-home developments, and is at present at 10 to 20 percent of its mature development potential. Commercial development is just beginning and is susceptible to change caused by the proposal. There is also much remaining potential for more second-home development, as well as recreation-oriented trade and services.

The Southside Planning Commission Study states that "by the time an area has reached about fifty percent of development it can be said that the area has begun to be mature and its character is fixed. But if Pea Hill Creek loses its appeal at its current state of development, future growth could be materially altered or be induced to locate elsewhere. Significant shoreline areas are still available for future uses and can still be influenced by external forces. It is one thing to have a quality area with homes, commercial and well-established uses; it is another to have a relatively immature area that can be materially influenced by the intrusion of potentially incompatible alternate uses of the lake."

Businessmen in the area state that the uncertainty

caused by the project has already affected investment and financing opportunities. The owner of Delbridge's, who recently undertook an additional \$1 million investment on the Creek, said that while he had no problem obtaining loans before the water withdrawal was proposed, he was now having difficulty because there was concern as to how the project would affect growth in the lake area. He wrote:

At the very least, it would be appreciated if there could be a speedy deposition to the acceptance or rejection of the proposal to prevent the continued uncertainty about the future of the area and the related adverse effects. Should an attempt be made to implement this proposal, I must assure that I, along with many others in the area, will take what legal action we can to protect ourselves and block this proposal project.

Mr. Delbridge verified the concern expressed by investors, citing a parcel of 250 acres of land on the creek that he and 17 other investors have for sale for large-scale development. The land is located in front of the golf course, which the same group gave to a local citizen with the understanding that a golf course would be built. This would then be an asset in the developing of a large development complex. However, he says potential buyers are now "skittish" because of concern over the effect of the proposal on the recreational attractiveness of the lake.

Both residential, commercial and industrial investors are hesitant--Georgia-Pacific had been considering building a wood processing plant on the Roanoke River near Halifax,

North Carolina and had acquired the necessary permits, but because of the uncertainty of a guaranteed water supply they shelved the plans.⁶

Thus even without implementation, the proposal is affecting the economics of the region, and Southside is anxious to stop the plan as quickly as possible so that the large-scale investments, which the area needs and is attempting to acquire, are not discouraged.

At the other end of the pipeline, the direct costs that must be assumed by the region are a major factor, particularly when the localities within the region have independent water sources and some localities have a water surplus. The proposition that all localities would pay the costs, but not all would receive equal benefits, is not politically viable.

Resource management

Given present design specifications, the two 48-inch pipelines are capable of handling as much as 240 mgd, so that if growth in Tidewater exceeds the projections upon which demand has been based, supply can be increased to support it. (Public Service Authority demand figures were based on 59.7 percent growth projections for the whole Authority by the year 2030.)⁵

One of Southside's main contentions is that a heavily populated region that has already exceeded the carrying

capacity of its land base should not deplete an underdeveloped region's resources to encourage still more growth, particularly when its own regional resources are not being efficiently utilized.

Because of rivalry between the various local governments in Tidewater, individual water supplies are zealously guarded. Growth rate predictions for each locality for this 55-year planning period vary widely--from a predicted population increase of 1.2 percent for Norfolk to 228 percent for Virginia Beach. These growth projections may not be valid, as Tidewater itself has expressed concern over its ability to continue to support uncontrolled growth. The city of Virginia Beach--the third fastest-growing city in the U.S. in recent years--is attempting to initiate a growth control plan.

There is presently no shortage of water in Tidewater and Portsmouth has a surplus. The four-city area of Portsmouth, Suffolk, Norfolk and Virginia Beach now consumes more than 90 mgd from a source of 117 mgd. Norfolk supplies water to Virginia Beach and some Chesapeake residents. Wells and lakes in Suffolk feed the Portsmouth system, which also supplies part of Chesapeake with water. Chesapeake has alleviated its problem by constructing a 10 mgd facility on the Northwest River near the North Carolina line. However, the systems are independent rather than interconnected so

that one system may have a surplus while another has a shortage.⁵⁴

This lack of interconnections was pointed out by the Virginia Tech study as a partial reason for Tidewater's problems and the Chairman of the Water Study Commission agrees, saying that while it may be years before Lake Gaston may be tapped, the major cause of potential shortages is the lack of a large-scale, interconnected system. He stated that cooperation to share water resources and develop additional supplies among the area's many jurisdictions could tide the region over until there was an agreement between Virginia and North Carolina.

Another management option that would have to be initiated is conservation. The Corps, in meeting with the Public Service Authority to obtain their cooperation, notified the localities that the area should have a conservation program before it could take another area's water.

The question of groundwater availability has been brought up since the study first began. In the September 1978 issue of Water News it was announced that Virginia Beach would attempt to establish an independent water supply (they presently buy water from Norfolk) by drilling two deep test wells--one for fresh water and another for brackish, which would then be desalted by a proposed demonstration

plant (approved in January 1979). Together with the Study Commission's report in March 1979 that the area could safely pump 88 mgd, these measures may solve Tidewater's supply problem. All of these management options (conservation, desalinization and deep wells) were proposed by Southside as viable alternatives to the Corps' proposals.

The management practices of the area were questioned much earlier than this in the April 1976 Virginia Tech report:

...the standard practice among planning agencies has been to project future water consumption based on a time extrapolation of past trends. These projections, in turn, have been labeled as "requirements", subject to little flexibility. The fact is that this encourages an approach to water supply which ignores the economic cost and benefit comparisons of alternatives essential to optimal resource management.

Even when physical water resources are abundant, financial resources may not be. The economic costs of retaining, treating, and distributing water, when compared to the benefits of such actions, may be so unfavorable as to make the physical availability of water irrelevant. Water supply plans should, therefore, carefully examine the financial implications of many possible alternatives; simply projecting past trends draws attention away from some alternatives. For example, attempts to modify use-trends by reducing system leakage, metering water use, or reducing industrial use will not appear feasible if there is a fixation on meeting projected "requirements". Thus, a community may save considerable sums of scarce financial resources by evaluating projected trends in water use in relation to alternatives that may aid in altering these trends. Altering trends in water use does not necessarily imply dampening economic growth.

As events in this study have indicated, it may be that these kind of analyses are necessary before embarking on large-scale proposals that turn out to be both politically and financially infeasible.

Interest groups and their communications

The groups involved in the issue are for the most part governmental entities--ranging from the Board of Supervisors of Brunswick County and their designated spokesman and representative, the County Administrator; to the Corps of Engineers. The multitude of agencies and their communications--or lack of it--is the most distinctive factor in this issue.

To begin with the Corps of Engineers, we have both the Norfolk Corps and the Wilmington Corps. While not specifically in opposition to each other, they are not cooperators. The Wilmington Corps has jurisdictional management responsibility for Kerr, and the Public Service Authority initially applied to them for a withdrawal permit, yet the planning study was given to the Norfolk Corps. It may be assumed that it was because the Virginia Congressional delegation petitioned Congress for the study, and also because the plan would serve the Southeastern Public Service Authority--the Authority designated by the state as the one responsible for alleviating southeastern Virginia's water problem.

Yet communication and coordination between the Corps, the Public Service Authority, and the various Tidewater jurisdictions would seem to be relatively nonexistent. By the end of the study the Authority made a public statement to that effect, and to obtain its backing for the proposal the Corps had to threaten to submit a negative report. Even so, the Authority's approval was modified with the statement that if a better alternative was found within ten years, the proposal would be scrapped.

While Southside authorities and agencies on many occasions expressed sympathy with Tidewater's plight, they focused their efforts on proposing less expensive, less intensive alternatives than those proposed by the Corps, and they expressed these at every public meeting and media opportunity that they could. Their opposition was not directed at the Authority, but rather at the Corps.

There were other state agencies in the case as well. Southside considered that the State Water Control Board had exceeded its authority by entering the issue at a late date and changing the course of the study, while the Public Service Authority felt that the Board should be willing to back up its pronouncements with facts, and also considered it to be an arbitrary figure in the issue. In particular, both regions--Southside and Tidewater--felt left out of the study procedure because decisions put forth by the Corps and

the Board were not substantiated by facts. Information was requested from both agencies many times, but the only response was that it was not available. Southside finally commissioned its own study, but the Authority could not get the data upon which the Board determined that the Nottoway/Blackwater alternative was not viable. In fact, the Board said that such information was obtained under a secrecy agreement with Union Camp Corporation and therefore was not available. As this was the alternative favored by both the Southeastern Public Service Authority and the Southeastern District Planning Commission, and verified by their studies as most appropriate, such answers were regarded as arbitrary.

The lack of available information and data and the Corps' exclusion of the agencies in the planning process itself intensified opposition. Agency officials who attended the workshops stated that you could ask questions, but you wouldn't get answers. Rather, the Corps would note the questions and submit written responses to them at a later date, with no way for the agencies to respond to those statements. In other words, there was no communication. Citizens who attended the public hearings stated that they were a show--a necessary requirement that didn't mean anything. People who attended the final hearing in Emporia at which virtually all of the 300 who attended, even those

from Tidewater, were opposed, stated that the District Engineer's attitude was as he himself expressed it at the later Public Service Authority's meeting: The Corps expected such opposition but could overcome it.

The Southside groups now serving as the focus for opposition is following a completely different strategy. Their main defense will be a communications offense. The Roanoke River Basin Association has not only hired lawyers to analyze the legal implications of interbasin transfer and water allocation, but also the Corps' planning process and Congressional funding authority.⁵⁶

They also hired a public relations firm that developed an environmental issue management plan delineating the areas where most effective opposition should be focused. In particular their lobbying efforts will center on the Virginia General Assembly where two interbasin transfer authorization bills were submitted and tabled in 1979.

Their main approach will be to create a climate of opinion unfavorable to interbasin transfer, focusing on both economic and environmental issues. They plan to develop a communications strategy based on what to communicate, when to communicate, and when not to communicate. They specify target audiences, under what conditions mass media coverage will be sought, and in general propose a systematic procedural approach to the problem, working "to elevate the

Lake Gaston interbasin water transfer issue to a highly visible statewide and national status."⁵⁷

Environmental factors

The study commissioned by the Southside Planning Commission, "Lake Gaston Economic Assessment and Issues Involving Proposed Withdrawal Project", dated April 7, 1978, provided Southside and North Carolina with their first real information concerning environmental impacts.

Rights-of-ways. The project will require acquisition of a right-of-way 100 feet wide for 33,000 feet through Brunswick County, creating 10,000 cubic yards of excess material and changing approximately 75 acres of land from prime recreation and wildlife areas to cleared rights-of-way.

Buffer zone. The intake structure is to be located 15 feet below water level and if constructed as planned will require several marker buoys as a warning to boaters. However, the normal practice in Virginia requires the structure to be above the water so that water can be withdrawn from various depths to allow for a more consistent quality of water by avoiding seasonal changes that are characteristics of this body of water.⁵ If this were the case, it would be an obstacle to navigation on the creek and would have to be well-marked to prevent collisions with skiers and boaters.

The State Department of Health, in responding to the letter of inquiry from the owner of Delbridge's, stated that

it would not require a horizontal buffer zone, provided that a minimum of three levels of intake were installed. This would have to be a design engineering decision. They confirmed this to the Planning Commission while stating that the Virginia Code allows counties, cities and towns jurisdiction over five miles upstream of a supply intake to prevent pollution.³⁹

Boat traffic is very heavy in the creek at this point, and the Rt. 626 bridge (1000 feet upstream of the proposed intake) serves as a bottleneck as only one boat can pass under it at a time. By law this is a no-wake zone requiring very low speeds and on busy weekends boats pile up and mill about in the area as they slow down and wait to pass through to Delbridge's. It would appear that water pollution from boat motors would be a real possibility.

Noise levels. The pump motor would have a decibel reading comparable to a noisy residence or quiet street if housed in a standard brick and block building; if not it would be comparable to a police whistle at 15 feet.⁵

Water conditions. Water currents related to 75 mgd withdrawal would be less than one-half foot per second. While it was not anticipated that these currents would affect skiers or boaters, they could have a significant impact on sportfishing and fish populations because of impingement on intake screens.

Inflows from the watershed above the intake on the creek average 11.8 mgd--but approach zero during periods of the year. Thus any withdrawal in excess of the inflow will cause a reversal in the direction of flow downstream of the intake site. Average velocities of flow downstream of the proposed intake are presently estimated at 4.46 feet per hour. If withdrawal were 75 mgd, velocities would reverse and range from 24 to 28 feet per hour. If withdrawal were increased to its maximum of 240 mgd, velocities would increase to 91 feet per hour--twenty times the present velocity of the creek and in the opposite direction. Flow reversals would occur daily and at unpredictable times and would affect temperature gradients, dissolved oxygen, suspended solids, turbidity, fish food supplies, etc. This is why the BASS Federation opposes the plan--as bass require stable water conditions.

Fishermen are not only concerned with Pea Hill Creek water conditions, but also those of the Roanoke River below the dam. Minimum flows are specified by the Federal Power Commission for minimum power generation and stream sanitation purposes, and to protect fish. They vary from 649 mgd to 1299 mgd depending on the time of year. From April 26 to June 15 additional flows amounting to 3896 mgd are needed to support striped bass spawning. This flow is not an FPC requirement and is not always met. Thus any

withdrawal from Pea Hill Creek during this time will directly affect spawning flows required for the reproduction of abundant populations of anadromous fishes. A further consideration is the saline curve in the Roanoke River and estuaries below the dam. Reduced fresh water flows may cause increased amounts of salt water over longer reaches of the river, affecting all sea life.

Land tenure

The proposal may affect opportunities for development along the creek and in the Gasburg area. If landowners' fears are justified, certain types of land use will have to be proscribed if such use would affect water quality considerations. These land use restrictions will then affect other forms of land use and development opportunities. As commercial development in the area is minor--with Delbridge's being the only exception--there are many such investment opportunities, and it is just this kind of investment that the proposal would most likely curtail.

As well as expressing concern over its effects on the kinds of uses to which land may be put, citizens worry that it will turn the clear water into a "mudflat", decreasing property values and limiting water use; i.e. swimming and docking boats.

Easements for the rights-of-way can be acquired through eminent domain procedures, and in that case landowners

should receive adequate compensation for such appropriation. Again, however, the use of land will be changed from forest and recreation use to clear land and property values may be diminished.⁵ If riparian landowners can prove injury, they may be able to reclaim damages under the doctrine of riparian rights; however, such proof of injury may be difficult.

Value system

Southside Virginia has long been a neglected part of the state. As the Brunswick County Administrator put it, "we are regarded as country hicks who are not nearly as important as an area such as Tidewater." But with the development of the lake, Southside has gradually become aware that they now have a valuable resource that can improve the economy of the region and thus improve the quality of life of people who have never had much opportunity to do so. The Administrator, writing by invitation in a Tidewater paper stated:

Today, our region is far behind Tidewater in economic growth. In my county 40 percent of our houses lack adequate plumbing. But we do have natural resources that we count among our assets for now and the future. If those exhaustible resources are tapped in the next decade, where does that leave us in the decades ahead?⁵⁹

People today are less apt to accept without question proposals made by governments--whether at the local, state or federal levels. In the case of the Southside residents

and local governments, they want the opportunity to use their own resources to improve their lives. They are not tied to a traditional way of life--they seek improvement. And they are willing to fight any authority that they believe is denying them the opportunities that they have not had.

Transportation system

Transportation is not a direct factor in this issue; however the good access routes to major population centers have encouraged second-home development in the Pea Hill Creek area, as well as providing a large population of recreationists who use the area on a daily or weekend basis. The new landowners in the area come from the Colonial Heights-Richmond area, Raleigh, North Carolina, the Peninsula (Newport News/Hampton) and Tidewater;⁸ so that at the public hearings, there were quite a few Tidewater residents who opposed the proposal.

Studies show that at this stage in Brunswick County's development, development is being influenced by its improved access to metropolitan areas--particularly because of its two interstate highways.⁵ If anything affects this private transportation network, such as a gasoline shortage, the recreational use of the lake will be affected, as there are no mass transit facilities available. In that case, the major argument of the area--that the proposal will affect

the recreational attractiveness of the lake--will be irrelevant.

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INDIANA WOODLOTS

This land-use case took place in the 1920s and 1930s in the Corn Belt of the Midwest and concerned the forest services of wood and grazing--mutually exclusive uses of the land that were not perceived as such by the landowners. The specific area used for illustrative purposes is north and north-central Indiana. The protagonists were the farmers who owned woodlots and state and regional forestry researchers and extension workers. There was no animosity between the two groups; rather the foresters believed that there was a problem and to alleviate it would require an extensive effort on their part to educate the landowners in proper forest management practices.

The Community

History

The Midwestern region of the United States has long been a productive agricultural region. In the mid-1800s, however, early settlers found a wilderness of giant hardwoods, with individual trees up to 6 or 8 feet in diameter, standing as high as 200 feet. On the uplands were beech, sugar maple, hickory, oak, walnut, ash, and tulip poplar. Soft maple, elm, buckeye and basswood covered the lowlands; and sycamores and willows grew along the creek bottoms. The settlers soon found that these trees covered

lands well suited for agriculture, and they began clearing and burning. The earliest records state that in 1870 there were approximately 7.2 million forested acres in Indiana. In ten years--by 1880--there were only 4.3 million acres left. The forests were cut initially so that the land could be farmed, but as the region became more developed, the demand for lumber grew and the farmers cut their woods to take advantage of the favorable market for timber. In another 10 years, 2.5 million more acres were cleared. At this time--1890--Indiana was the fifth-largest timber-producing state in the country, as the supply in the east had dwindled. By then Indiana's supply was dwindling too, and by 1909 there were less than 1 million acres of woodlands left in the state. In 40 years the vast forest resources of the state had been largely depleted.

The forested lands that remained were for the most part farm woodlots, left because the lands were unsuitable for cutting or the farmer needed them to satisfy his own wood needs or to provide pasture for his livestock. As early as 1909 foresters were warning that these woodlots were in very bad condition and were deteriorating rapidly.

Land tenure

By the 1930s Indiana lands were being used almost exclusively for agricultural production. Of the forested lands remaining, more than 80 percent were classified as

farm woodlands. Much of this forested land was located in the prime agricultural districts of the Corn Belt--that region comprising 56 counties in the north and north-central part of the state. These woodland tracts were scattered, individually owned and were rarely larger than 40 acres.¹

The livestock industry had become an important part of the economy during the early 1900s, because at that time a farmer could make a larger profit by selling grain-fed livestock than by selling grain. This upsurge in livestock production resulted in an increase in the acreage devoted to forage crops and a corresponding decrease in land that could be used for pasture. Overstocking on the available pasture lands seriously affected their grazing capacities. Farmers reported that in many cases native pastures had deteriorated to the point where they could sustain less than one-half of their former livestock use. To supplement their pasturelands farmers began using their woodlots for grazing, and by 1930 almost one-third of their pastures were former woodlots. This meant that about 84 percent of the total acreage of farm woods in the Corn Belt counties was being used for pasture. The stocking intensities on these pasture/woodlands were as heavy as on the native pasturelands and the effects of grazing on them were much more severe. Day and DenUyl in 1932 estimated that woodlots were being overgrazed by five times their carrying capacity,

and that as a result of this stress at least 50 percent of the grazed woodlands were incapable of producing timber products. Translated into area statistics, this meant that 575,000 acres of woodlands in the 56-county region were rendered unproductive because of grazing pressures. While grazing caused the most damage, unregulated cutting reduced the productivity of another 230,000 acres so that only about 0.5 million out of a total of 1.3 million acres of farmwoods were productive. This decline was occurring at the rate of 2 percent per year in the decade between 1920 and 1920.¹

Economic system

The decline of the timber resource was of economic importance not only to the farmer, but to the region and the state as well. The farmer at this time was receiving a \$15 million return from the sale of his forest products. This did not include the considerable benefits to him from his own use of wood. The products of the woodlot at this time were: (1) small products (cordwood, posts and mine timbers), (2) intermediate products (railroad ties, pilings and sawlogs), and (3) large products (veneer logs). In addition the farmer drew upon his woodlands for fuelwood, fenceposts, and other miscellaneous farm needs. Local wood processing firms were dependent upon the farm forests for their raw materials, while the state--a large user of lumber--saved extensive freight expenses by using local timber.

In addition to the economic impact of grazing upon timber production there was another serious economic aspect of the transition from forest land to pasture land--the decreasing productivity of the new pastures. Continued grazing was eliminating the better forage plants as well as tree regeneration.²

Taxation and law

Prior to 1921, forest lands in the good agricultural districts were taxed at the same rates as productive farm lands. Under this tax system, farmers reasoned that it would be to their advantage to use their woodlands as pastures too and receive at least some short-term benefits from livestock production to offset tax costs while waiting for their long-term forest investment to mature. The State Division of Forestry lobbied to correct this imbalance in the tax structure, and provide an incentive for forest investment. In 1921 the Forest Classification Act was passed. This legislation enabled farmers to reclassify their woodlands to a much lower tax rate. To qualify for this reduced rate, woodlands were to be used only for wood production--not for grazing purposes. The act served the dual purpose of encouraging forestry and discouraging woodland grazing. By 1932 over 1,150 woodlot owners had taken advantage of this tax reduction and livestock had been removed from 75,000 acres.¹

Environmental factors

There still remained the problem, however, of rehabilitating the damaged lands. There were three broad forest types found in this region: (1) the oak-hickory type, occupying the thin, drier soils; (2) beech-maple, found on the better soils; and (3) the wet upland type, comprising several swamp communities and including elm, ash, red maple, basswood, and other species.²

The oak-hickory type was much more prevalent than the others, as it was found naturally on the poorer, drier sites that were not as favorable for farming and hadn't been as heavily cleared as the other types. The beech-maple type was the climax forest on upland soils, but as the type had been cut so heavily, it was not as commercially important as the oak-hickory type. Beech dominated the stands as the sugar maple and tulip poplars found in this type were preferred for harvesting. As a result, the beech--which will expand laterally if given the opportunity--occupied much more space than it would in a normally closed stand. The wet upland type, which was both less extensive and less commercially important than the other two, was also used less for grazing because of environmental considerations such as standing water and the presence of poisonous weeds.

Grazing intensities. Grazing was more prevalent on the oak-hickory stands than on the beech-maple because the oak-

hickory had a less dense canopy cover and therefore a greater initial abundance of forage. While grazing in beech-maple was not as widespread, where it did occur it was practiced more intensively, as this type occurs on more fertile soils and therefore the available forage was more desirable.

Standard browsing intensities are as follows: (1) light grazing, 10 acres per cow; (2) moderate grazing, 4 to 10 acres per cow; (3) heavy grazing, 2 to 4 acres per cow; and (4) very heavy grazing, less than 2 acres per cow.

In the wet upland type the average grazing intensity was 3 acres per cow. In the oak-hickory stands the average was 1.7, while in beech-maple the average was 1.4. Under the very heavy grazing intensities in the latter two forest types only the most unpalatable forage species could survive. The beech-maple type sustained the most serious damage. Even when lightly grazed, over a 50-year period species composition was altered; often tulip poplar was completely eliminated. Soil compaction was another severe problem in this type of forest, particularly damaging to the shallow-rooted beech. In the wet upland type a more common practice was to enclose a woodlot with an adjacent pasture. Trampling and compaction were major problems in such woods, and many stands were converted almost completely to pin oak.

Stages of conversion. A productive woodlot is dependent

upon several things. The most important of these is a thick layer of humus and litter on the forest floor to provide nutrients for the trees and to preserve moisture in the soil.

This layer of humus must be protected from the damaging effects of sun and wind. If too much sun reaches the forest floor, weeds and grasses will take over and eventually a sod cover will be formed. Too much wind will dry out and damage the humus. A woodlot needs both an extensive crown canopy to prevent sunlight penetration and a barrier of undergrowth to diminish wind effects. The woodlot also needs adequate regeneration of desirable species. The humus and litter layer provide a favorable environment for germination and protect and nourish the young seedlings.

When livestock are turned into a woodlot the first effect is the loss of new young vegetative reproduction. The most desirable tree species are also the most palatable to livestock and the only species that can survive are unpalatable weed species. Even one year's grazing is enough to open up the understory so that herbaceous vegetation is increased. Within five to ten years all reproduction will be killed and the lower limbs of older trees will be gone so that a characteristic grazing line is established. In some stands this occurs in less than 3 years. Selective cutting is the appropriate silvicultural technique in such a woodlot

and as the larger trees are cut or there is natural mortality the canopy is opened up. This, together with the lack of protective understory, causes deterioration of the forest floor. Wind and sun dry it out and conditions favorable for germination no longer exist. Weeds take over. This is the early stage of conversion.

The next, transition, stage covers the period between the establishment of the grazing line and the widespread growth of pasture grasses. This can take anywhere from 20 to 40 years, depending upon the time required for a complete sod cover to become established. At this point there is no remaining understory.

The open park is the third stage and the point at which environmental degradation has reached the point where removal of livestock will not correct the problem. At this stage crown density averages between 50 and 70 percent and the sod cover has reduced the soil moisture content to the point where loss of available moisture and nutrients causes the death of existing trees.

In the final stage crown density is less than 50 percent and natural restocking of desirable species cannot occur. The bluegrass sod cover can persist for as long as 25 years after livestock is removed.^{1,2} The woodland is in its final stage of conversion to open pasture.

Value system

The foresters viewed the problem from a professional perspective: the farm woods were not being managed according to accepted forest practices. Guise in 1950 wrote, "The primary problem in farm forestry is that of educating the owners of small woodlands to the value of conservative cutting practices and continuous production. The practice of forest management will follow naturally."³ Day and DenUyl in 1932 wrote that "it is important that the farmer realizes the economic importance of his woodlot as well as the best techniques for managing it".¹ As early as 1909 Pegg talked of the depleted condition of central Indiana woodlots, stating that the practices of cutting trees for immediate needs and allowing grazing in the woods caused farm woodlots to be in very poor condition with a prevalence of undesirable species and destruction of the humus and leaf litter. He listed the services which the woodlots of that time provided to the farmers--a list reminiscent of today's multiple use concept of forests: (1) wood products in the form of fence posts, firewood and general farm use, as well as lumber and railroad ties; (2) climatic influences such as moderating soil and air temperatures, reducing evaporative water loss from the soil and reducing wind effects; (3) shelter for animals from both heat and wind; (4) aesthetics - increasing the beauty of farms as well as communities inexpensively; (5) watershed protection - regulating the

flow of streams; and (5) erosion prevention - increasing the absorptive capacity of the soil.⁴

But the farmers had initially cleared their lands out of necessity--so that they could plant their crops. They continued clearing as timber markets grew until most of the lands left as woodlots were those that were either marginal as farm lands or were not suitable for timber cutting because of terrain or species limitations. Few considered the multiple services that Pegg spoke of. The farmers' use of the land was based on their immediate economic needs for the most part with little thought given to long-term considerations. This was not a time of plenty and present needs were of paramount importance. Lacking any specific information to the contrary their use of farm woods to satisfy their need for more pasturelands was simply a way of utilizing the land more fully.

Interest groups and their communications

The two interest groups, farmers and foresters, shared in part the same goal--to improve the productivity of the land. However, their perspectives were completely different. To the foresters, there was a serious problem caused by poor land management.⁵ The farmers, on the other hand, did not consider that their woodlands were resources capable of producing a crop like any other agricultural crop, whether on a periodic or an annual basis.³ They were

geared to short-term economic gains rather than long-term sustained yields.

The foresters therefore considered their objective to be the education of the farmer. They used both research and communications in an attempt to correct the problem. They conducted research to identify the problem and understand its ramifications and they used communications to explain the results to the farmers and try to persuade them to change their management practices.

They researched both the effects of grazing and the possibilities for rehabilitation of damaged woodlands. These results were published in state extension bulletins and efforts were made by the extension forester at Purdue University to disseminate this information to farmers in the area. Pegg, writing in 1909 in an attempt to instill in the farmers an appreciation for their woodlots so that they would either maintain or create them, cited a letter from a farmer:

I have logs enough cut now to make from 40 to 50,000 feet of lumber. These logs I cut from a ten-acre grove that was only a brush patch 13 years ago. In addition to the logs the grove has supplied plenty of wood for from 2 to 4 stoves and some for sale, besides posts and poles, all of which come from the thinnings. There are still enough trees on the land to make a good grove.

He drew the following conclusions in 1909:

1. The present woodlots are in very bad condition;
2. well-managed woodlots are valuable financially, climatically and aesthetically;

3. old woodlots can be improved and new ones planted successfully;
4. woodlots must be managed to secure best results;
5. a woodlot is a paying investment;
6. the one thing lacking is universal interest.⁴

Resource management

Subsequent foresters in the '30s reached the same conclusions and itemized specific management techniques that should be implemented to improve the condition of the farm woodlots. As late as 1950 they were still delineating the deteriorated state of farm woodlands nationwide and explaining why rehabilitation was so important. In 1946 farm woodlands comprised 30 percent of the total acreage of commercial timberlands in the United States and contained 15 percent of the estimated sawtimber supply. Yet Forest Service studies indicated that only 27 percent of them were even crudely managed and the great majority were understocked, both in volume and quality of species.

The foresters considered the needs to be: (1) to restore the woodlots to a productive condition, and (2) to manage them to ensure a continuous supply of timber or other services including protection from winds, wildlife habitat, soil stabilization, wood products for the farm and aesthetics.³

The problem of rehabilitating damaged woodlands is complex. Grazing not only eliminates regeneration but alters the ecological characteristics of the land so that

the moisture and nutrient regimes are completely changed. These must be restored to something approaching their initial states. Two factors--the presence or absence of a sod cover and the density of the crown cover--determine whether a stand can regenerate itself naturally. Beech-maple stands usually can be rehabilitated in a shorter period of time than oak-hickory because the wide-spreading beech constitutes a larger percentage of the stands and the canopy closes earlier than in the oak-hickory stands. As the growth of sod is dependent upon close grazing and light, when livestock are removed and the sod does not receive full sunlight, it will deteriorate rapidly. In addition, canopy density is positively correlated with favorable conditions for regeneration.

Rehabilitating damaged stands. Studies showed that natural regeneration could not be relied upon to restore damaged stands; special management techniques would have to be instituted.

Five years after the removal of livestock in stands in the early stage of transition to pasture, natural regeneration would be well established and would be largely that of existing stand species. However, at the time of livestock exclusion it would be necessary to destroy the undesirable species.

In the transition stands natural regeneration would be

adequate but its character would depend upon crown density and the percentage of favorable species in the stand. If crown density was less than 80 percent, reproduction would include a large number of light-seeded species brought in by animals and the wind, rather than the heavy-seeded, more desirable natural stand species. Undesirable species would have to be removed at the time of livestock removal, but crown density should not decrease below 70 percent and a windbreak should be planted to protect the new young growth.

In the open park stands natural regeneration and sod disintegration can take from 5 to 15 years. In these stands, as most of the favorable trees have been removed, the canopy is so sparse that the dominant trees must be left, regardless of species, to shade and protect the area. Management techniques depend on the type concerned--in the upland swamp types regeneration would be more successful, as the sod cover would disappear faster and restocking should be adequate in 5 years. In the oak-hickory stands all small undesirable species should be removed and the sod cover would have to be broken up manually. In the beech-maple stands underplanting with desirable species would be necessary as the overstory would probably consist of over-mature and hollow beech.

Restoration of final stage stands might not be practical as the sod must be disked for several years and

artificial regeneration would be required. The farmer's needs, however, might justify such an expense.¹

In addition to advocating these specific management techniques for farm woodlands, the foresters attempted to explain to the farmers the economic aspects of woodland grazing. They pointed out that their studies showed that even in the better agricultural sections of the Corn Belt woodland forage productivity could not sustain animals without supplementary feeding. This was true on lands grazed substantially less intensively than was common in this region. Continuous grazing not only lowered forage productivity but also quality as both palatability and nutritive value were lessened.

In short, the foresters attempted to show the farmers that by using the same lands for both wood production and grazing, both services would be diminished and the land would become increasingly less productive.

Summary

This land-use issue was perceived to be an issue by only one group--foresters who found that farm woodlands were being severely damaged and destroyed because of the effects of grazing. The farmers who owned the woodlots, however, did not consider this a serious problem. The livestock industry had become a good investment for them. To support this industry they needed to put more lands into grain

production; this decreased their pasturage. To provide needed pastures for their livestock they simply used their only remaining lands--the woodlots. This, to them, was a perfectly rational use of their lands.

The foresters saw the situation differently. They placed more value on farm woodlands than the farmers did. This was the basis for the conflict. The foresters saw that to change the attitudes of the farmers they would have to identify the benefits of the woodlots that the farmers either had not perceived or had consistently undervalued. An intensive educational effort would be required--in effect, they would have to educate the farmers in forest management.

It should be noted that this effort took place for the most part during the "Great Depression" years and must be put within this context. DenUyl in 1934 wrote that at this time there were extensive economic and sociologic changes taking place in the field of agriculture and that the professionals felt that a "planned land economy" was needed. Several land-use conferences were held throughout the Central States; one of the results being a growing emphasis on the importance of forestry in "new" agriculture and the need for farm woodlands as an integral part of a well-managed farm.⁶ However, what professional foresters believe should be done and what small individual landowners believe they can do in a time of severe economic stress are not

necessarily the same. It simply may not be possible for a small landowner to manage his lands from a long-term perspective, even if he knows all the silvicultural facts. Not only value systems, but economic needs dictate the management practices of small farm woodlot owners.

Analysis of the Variables

The primary variables in this case in which conflict is minimal are: (1) economic system, (2) environmental factors, (3) interest groups and their communications, and (4) resource management.

Secondary variables are: (1) value system and (2) taxation and law.

Negligible variables are: (1) land tenure and (2) transportation.

Economics is the first and foremost primary variable. The land use in question in this case--grazing--was based solely on economic considerations, as might be expected in a time of depression. Because farmers found that they could make more profit by selling grain-fed livestock than by selling grain, they increased both grain and livestock production and began using their woodlots for grazing. They believed that in this way they could derive some additional economic benefits from "idle" lands.

This caused environmental factors to enter the picture. Foresters found that grazing was rapidly affecting the

quality of farm woodlots and in some cases was damaging them past the point of recovery.

They began effort to educate the farmers, conducting studies that showed that the economic costs of grazing in woodlands exceeded the economic benefits of such land use. So that interest groups and their communications is the third primary variable.

The fourth primary variable is resource management, and this is the basis of the conflict, as is true in most land use issues. The farmers were managing the land in a manner that they believed was rational from an economic standpoint. The foresters believed that such management practices were both economically and environmentally unwise.

The two secondary variables are inherently important, rather than obviously so. The value system of both groups--farmers and foresters--determined their actions. The farmers were concerned with making a living in a time of hardship; the foresters believed that maintaining healthy, sustained-yield forests should be the prime consideration. The foresters viewed the problem from a long-range perspective; the farmers' view was short-term.

Taxation was important in that burdensome taxes had caused many landowners to begin using their woods for grazing to derive some immediate returns to offset tax costs. Later, tax relief was provided for forestry

investments and this encouraged the withdrawal of grazing from woodlots--one of the stipulations of the new tax law.

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THE ADIRONDACK PARK

This land use issue was initiated in the early '70s--1972 and 1973--and is partially unresolved in 1979. The issue concerns the forest service cf residential development opportunity; particularly the magnitude of such development. Retaining existing land uses is the alternative. These uses require extensive amounts of open space and include the services of wood, recreation and aesthetic values, and water and air protection.

The place is the Adirondack State Park in upper New York and the protagonists include prospective developers, local residents and government entities, state agencies and environmental groups. The case concerns the most restrictive land-use regulations in the country.

The Community

The Adirondack Region

The Adirondack region of northern New York state is an area of mountains, lakes and plateaus, heavily forested with second- and third-growth hardwoods. It lies between the Hudson and St. Lawrence river basins and protects the headwaters of five major watersheds. Its mountains are part of the Laurentian Highlands of Canada and are unlike the Appalachians in that they do not form a connected range, but consist of isolated peaks or groups of peaks. The summits

are not rugged, but form a rolling terrain, although there are 46 peaks that are higher than 4000 feet. The region also contains 5,000 miles of rivers and streams and more than 2,000 lakes and ponds, most of glacial origin, clear and cold. The climate is severe, with extremely low temperatures in the winter that have limited both travel and recreation. The recent advent of snowmobiles, however, has opened up formerly inaccessible areas to both local residents and tourists.

The Adirondack Forest Preserve

The Adirondack region had remained a wilderness area for a long time because of its isolation, but by the 1880s concern had grown over the effects of extensive logging. The loss of forest lands as well as impacts upon fish and wildlife populations and water supplies for downstate residents were given as reasons for creating a Forest Preserve. On May 15, 1885, in spite of heavy opposition from timber and mining interests and land developers, the state legislature approved the Adirondack Forest Preserve. The public lands in the preserve were "to be forever kept as wild forest lands" that could not be leased, sold or exchanged. No form of forest management was included in the legislation, but an amendment to the state constitution in 1894 prohibited the sale or removal of timber from these lands.¹

The Adirondack Park

Seven years after the preserve was established, the Adirondack Park was created, to include the same land area as the preserve. It encompasses six million acres and is the largest park, either state or national, in the United States. Approximately the size of Vermont, it is a mixture of both state and private lands--a park where people live and work as well as play. The park was created by state law in 1892, in large part because of pressure from the influential large estate owners in upper New York--the tycoons of that time--who wanted to protect their lands from encroachment. The reason given for creation of the park, however, was to protect the forests and watersheds of the region for the people of the whole state. Its enabling legislation called for it "to be forever reserved, and maintained and cared for as ground open...for the free use of all the people for their health and pleasure and as forest lands necessary to the preservation of the chief rivers of the state and as a future timber supply."²

The creation of the park, while not giving the state any authority to regulate the use of private lands, set boundaries--called the Blue Line--that delineated an area in which the state would attempt to acquire existing private properties. Although the Blue Line has been expanded and revised over the years as the state has acquired more lands,

3.75 million acres within the park still remain in private ownership.³ Thus the state owns approximately 40 percent of all the park lands, lumber and pulp companies own 28 percent, and other private holdings make up the remaining 32 percent. This mixture makes it unique among wild areas and has contributed to the land-use conflicts that have arisen within its boundaries.

The distinction, then, between these two government entities (preserve and park) is that the preserve consists only of state-owned lands, while the park includes all the lands within its designated boundaries, both private and public.

Land uses

Lumbering and mining have been the major economic supports of the relatively impoverished region. With over five and one-half million acres of commercial forest lands in the Adirondacks, lumbering in particular has historically been the main source of economic opportunity for local residents. While this is still true today, other forest services such as recreation, purification of polluted air, watershed protection, homesites, and aesthetic considerations have become important assets of the region.

Other products of the Adirondack forests have included charcoal, cedar oil, tannin, potash, and Christmas trees. Maple syrup was a major cash crop for years, and although

production has declined, as late as 1972 New York was the largest producer of syrup in the nation--in terms of both volume and value. Use of the forests as a source of fuel may be another service of increasing importance as alternative energy sources are developed. In any case, the extensive forest lands in the park--both public and private--are a tremendous asset both to local interests and to the state and nation.

Open land uses in the park include farming (a relatively minor land use--8 percent of the total amount), homesites, and recreation--in particular, snowmobiling, a recreational activity that has become very popular in recent years in the region. Not only visitors, but local snowbound residents find the wide open spaces, deep snow cover and ice-covered lakes ideal conditions for both travel and recreation during the long winter months.

Mining is very important to the region and the park as well. Within park boundaries are the largest open pit iron ore mines in the world, the largest open pit titanium ore mines, and the largest garnet mines. The park contains zinc mines, the only commercial mining of silicate of calcium in the United States, and the largest producer of commercial talc. Limestone, marble, graphite, sandstone, peat and diatomaceous earth are other mineral resources of the area.

While land uses within the park have historically been

complementary, development pressures in recent years have caused intensive conflicts, as an improved transportation network from large metropolitan areas has made the region more accessible. (The park lies about 200 miles north of New York City and the completion of Interstate 87 from Albany to the Canadian border in the '60s put the park within a day's drive of some 55 million people.)⁴ The park's permanent population of 125,000 increases in the summer to more than 9 million, and snowmobilers and other winter sports enthusiasts have created a demand for winter accommodations as well.

The Temporary Study Commission on the Future of the Adirondacks

As the park's isolation decreased and use increased, large second-home developments were proposed by out-of-state developers who attempted to buy huge tracts of land. Lack of zoning regulations on 90 percent of the private lands in the park combined with land ownership patterns caused concern over unregulated development at the state level. Governor Rockefeller in 1968 appointed a Study Commission to consider the future of the Adirondacks and to submit management recommendations for the park.

The Commission reported in 1970 that "if the Adirondacks are to be saved, time is of the essence".³ It stated that only 1 percent of the private landholders owned

more than 50 percent of the private lands. 33 percent of the total land in the park and 53 percent of the private lands were owned by 626 large landholders--a total of nearly 2 million acres. Of these, 32 corporations and individuals held over 10,000 acres each (a total of 1.2 million acres) and three large paper companies owned more than 125,000 acres each.

The forested lands in the park were equally divided between public and private ownership and so the preservation of these privately-owned open spaces was important in preserving the park's character.

To ensure protection of the park, the Study Commission recommended that an independent Adirondack Park Agency be established with statutory authority over both private and public lands. In particular, the agency should have both planning and land-use control over the private lands.⁵

Adirondack Park Agency

On September 1, 1971 the Adirondack Park Agency was established by the state legislature. It consisted of seven members, four of whom were to be full-time park residents, plus the Commissioner of the Department of Environmental Conservation (the agency responsible for the Forest Preserve lands), and the Director of the Office of Planning Services.

Land-use Plan for state lands. The Act that created the agency gave it a mandate to prepare a master plan

by June 1, 1972 for management of state lands, classifying them as to their characteristics and capacity to withstand use, and providing land-use guidelines. On July 20, 1972 Governor Rockefeller approved the Master Plan to guide management and recreational use of the 2.27 million acres of state lands in the park.

The Master Plan specified five land-use classifications: wilderness, primitive, wild forest, canoe, and intensive use areas. Approximately 1 million acres, or 45 percent of the lands were designated as wilderness with no motors and no structures bigger than lean-tos allowed, while 75,670 acres that were not pristine enough to be classified wilderness were defined as primitive, with no snowmobiles or motors permitted. The majority of the lands, or 1.15 million acres, was designated as wild forest, where camping, snowmobiling and other regulated recreational activities were allowed. 18,000 acres were canoe areas, with no motors or motor access allowed, and the remaining public lands were classified as intensive use areas, as they contained existing recreation facilities.⁶ The plan incorporated public hearings and did not need legislative approval. It was drawn up by the Agency in consultation with the Department of Environmental Conservation, which controlled the state-owned lands.

Land-use Plan for private lands. Under the Act, the agency

was also given the mandate to prepare a land use and development plan for private lands in the park by January 1, 1973. This proposed regulation of private land use generated intense opposition not only to the plan, but to the Adirondack Park Agency as well. It emphasized the major conflict between the economic needs of the region--the poorest part of the state, with an unemployment rate as high as 30 percent in the winter--and the state's desire to preserve the natural beauty of the region for everyone.

As demand for second homes escalated and large-scale developments were proposed, local governmental units opposed state agencies. Local authorities were concerned that they were not only losing control of local issues, but would lose much-needed prospective tax revenues as well. Residents opposing the plan also expressed these two major concerns. There was so much opposition that the legislature approved a year's delay for authorization of the plan. This was vetoed by the governor. Some concessions were then made: state aid to local government in the park was increased--this included additional payments in lieu of taxes and planning funds; another park resident and the State Commissioner of Commerce were added to the Agency Board; and some restrictions on development along highway and lake shores were eased.

On May 14, 1973 the legislature approved the modified land-use plan. Under this plan each parcel of private land

in the park fell into one of six categories. 53 percent of the private lands were in the most restrictive category, where there could be no more than one building on 42 acres. This included most of the large, uninhabited stretches of forest lands. 32 percent of the lands were restricted to one building every eight and one-half acres; ten percent were limited to one building every three acres; and five percent of the land was classified as hamlet, moderate use and industrial. Existing hamlets would not be affected. The plan went into effect on August 1, 1973 and required agency review of all development proposals within the park on five or more lots or on five or more acres of land. The major impacts of these restrictions fell on land sales and values, rather than on existing land uses such as mining, lumbering and farming.¹

The Issue

Two proposed developments illustrate the land-use conflicts that led to the implementation of this plan, which is one of the country's largest land-use regulatory plans, incorporating the most stringent controls over private land use.⁷

Horizon

In March 1972 a New York Times editorial announced that the Horizon Corporation of Tucson, Arizona had bought a tract of 24,345 acres (about 38 square miles) in the

Adirondack Park from the Northern Lumber Co., Inc., with the intention of creating a second-home development for 30,000 people. Located in the northwestern part of the park, lot sizes would average one and one-half acres; access roads, golf courses and skiing facilities would be constructed; and three 200- to 300-acre artificial lakes would be created by damming up the scenic Grass River. Driven wells would provide water and septic tanks would be used for sewage disposal.⁸ The editorial stated that such development was contrary to the "forever wild" clause and quoted the Adirondack Study Commission's statement that "uncontrolled development is a greater threat to the Adirondacks than was the uncontrolled lumbering at the turn of the century".⁹

In rebuttal, the former president of Northern Lumber stated that the land was privately owned and so the "forever wild" clause did not apply. Furthermore, he went on, while the editorial had described the area as "a primeval area of forest and wetland", the timber on the land had been repeatedly and heavily cut for 100 years; it was not particularly mountainous land; and the scenic Grass River was not a river at all, but a series of creeks that were not particularly scenic. "Its present population is loggers, hunters and snowmobilers, who have cut down trees, virtually decimated the deer population and littered the woods with beer cans and refuse."

He stated that the land was first offered for sale to the state, which declined to purchase it, and he quoted a source connected with the Study Commission as stating that the Commission findings supported responsible recreational development on private lands in the park to alleviate user pressures on state lands. This would also provide economic benefits to local residents, who are economically deprived to a large degree. The president went on to say that the Commission may come to the conclusion that recreational lot owners who had invested their money in wilderness had a larger stake in conservation than loggers, hunters and itinerant snowmobilers. "In this particular instance I feel controlled private development to be the wisest form of land use. It brings benefits both to prospective owners and to citizens of the state."¹⁰

A local resident differed with the president's claim that the development would be an economic boon to the area. She said that few "old folks at home" were loggers, hunters, or snowmobilers, and that few were likely to benefit from the service and construction jobs the developers and investors would offer. "Without these benefits taxes are low, and the many retired people, mothers, children and others who work in the villages and on the farms in the area can live in fair comfort and peace within their limited means." She considered the project a vast rural people

removal plan, and believed that high taxes and development would force out the old inhabitants. "Is this a wise form of land use?"

In closing she cited the president's claim that it was all right to take the land for development because there really were no woods left, there were hardly any mountains, and the Grass River wasn't very pretty. "Why not leave it then to the hardy folk who live there and are under the happy illusion that what they see around them are forests and mountains and pleasant streams?"¹¹

The editor of the New York Times agreed with her assessment, stating that if there were a clear choice between human prosperity and environmental degradation, trade-offs might be considered. However, he believed that this type of development would not ensure economic gain for anyone but the corporation. He listed the costs: land values would inflate, property taxes would rise, jobs would be specialized and seasonal, and aesthetic and environmental damage would be considerable. Summer houses or empty lots would replace woods that shelter wildlife, a scenic river would lose its character, and open meadows would vanish.¹²

An Adirondack native and owner of wilderness land there expressed concern for the culture and character of the region as well. He stated that the project should be objectionable to those who favored controlled development as

well as those who were strict conservationists, because the project was not in keeping with the scale and style of the region. He noted that a community nearly five times larger than the largest existing population center within the park would be created with a complex of suburban amenities (shopping center, motel, golf course, etc.) in an area whose most valuable resource was its simplicity and rustic character. He believed that the economy of the area was important and should not be allowed to stagnate; but that low density use of the tract would yield an economic return and could still be compatible with the character and tradition of the region.¹³

Approval for the project would have to be obtained from two state agencies: the State Department of Environmental Conservation would have to authorize the damming of the streams, while the Adirondack Park Agency had interim powers to rule on proposed development in the park until June 1973, when it was assumed that the legislature would have accepted, rejected or modified the land-use plan due January 1, 1973. (It went into effect in August 1973.) Under these terms, the agency had 90 days from the time of submission of a formal proposal to make a judgment. Horizon had not submitted such a proposal in June 1972 and it was thought that they might wait until the land-use plan was presented in January 1973, when public hearings would be held.¹⁴

Opposition to the project became organized. Citizens to Save the Adirondack Park, a group with 2,200 members, had been formed in April 1972 to block large-scale housing developers from the park. Together with other groups such as the New York State Conservation Council, the St. Lawrence County Environmental Management Council, and the Students for Environmental Alternatives, they exerted pressure on the government agencies with decision-making responsibilities. Their position was that development would damage or destroy wildlife habitat, pollute streams, would replace natural beauty with ugliness, would not be in keeping with the park's basic purpose and would jeopardize the "greatest wilderness area east of Mississippi".¹⁴

Ton-Da-Lay

Meanwhile a second project was proposed in the same general area of the park. The prospective Horizon development was located 40 miles north of Tupper Lake; now, in November 1972, a project called Ton-Da-Lay was proposed for a privately-owned tract of 18,500 acres, also near the town of Tupper Lake. The Tupper Lake community is a small town of less than 5,000 residents. Ton-Da-Lay was to be a second-home community of 20,000 residents with space for camper trailers, "ranchettes" around a common range, condominiums, "estate" waterfront lots and a central 3,000-acre area with shops, resorts, restaurants and an

audio-visual Adirondack museum.

The developer, Mr. Paparazzo of Connecticut, had purchased the land from a partnership that included a New York State Assemblyman, who stated that he had helped get the legislature to restrict the Adirondack Park Agency from operating in areas where towns had adopted their own zoning laws prior to July 1971.¹⁵ This was the case in Tupper Lake where zoning laws were adopted before the deadline. Authorization for this project would rest with the Department of Environmental Conservation, with authority over water supply permits, and not the Adirondack Park Agency. The Times editorialized that the department's authority should extend to all environmental factors, rather than just water, and urged that they be considered in the decision, as it would affect other development-threatened areas as well.¹⁶

The Commissioner of the Department agreed, saying that this was the largest development they'd ever been asked to consider and the first in the Adirondack Park, and it would receive careful consideration because of its precedent-setting status.¹⁵ Mr. Paparazzo submitted a request for approval of development on an initial 1,000 acres in November 1972, but the Commissioner asked for details of the whole plan before a decision could be made. Public hearings were initiated on December 5, where the developer stated

that only eight percent of the land would be developed, and that each person who bought one of the 4,000 homesites would have to sign a "covenant" pledging to clear no more than 20 percent of his lot. He admitted, however, that there was no guarantee that more development would not occur in areas that he did not now consider subdividing.

Again, the conflict concerned financial benefits versus environmental values. The president of the local Chamber of Commerce in Tupper Lake said, "We've got a bunch of super birdwaters who are against Ton-Da-Lay. They have to let us make a living. We have to survive, and if they put a fence around us and say no to development, we're in trouble. Ton-Da-Lay is going to upgrade our tax base. It will be good for our stores." He felt that Papparazzo was different than most developers because he had hired a local attorney and bought a home in the village for his family. "They showed they wanted to be part of us, not just take the money and run."

The Sierra Club representative said that the townpeople are so poor and so preoccupied with "just getting along that they haven't got time to think of the consequences".

The Assemblyman said, "It's a man's own property, and a man can do what he wants with it."¹⁵

In August 1973 the Commissioner of Environmental Conservation rejected Ton-Da-Lay's application. Elaborating

on the decision, he said that it was designed to prevent subdivision of the park and destruction of its natural beauty of forests and lakes. He stated that he was not against all development, just overdevelopment, and that he would consider a revised application from Ton-Da-Lay, but "clearly something much less than that proposed here." The project was to have approximately 300 homes per square mile, while the newly instituted land-use plan called for no more than 17 homes per square mile for this region. Major developers consider that such a density is economically impractical.

The Commissioner stated: "I do not hold that there can never be any development, rather I hold that the development that does take place must be consistent with the capacity of the resources to sustain the impact of man. This is no radical doctrine, it is simply rational decision-making." He went on to say, "We will use the permit authority as vested in the state to try to bring about rational land use rather than sitting idly by drafting lofty land-use plans that never really affect what's happening on the ground."

The decision came after 29 days of hearings at which developers insisted they would bring orderly development into an impoverished area, while environmental groups insisted they would bring about destruction of the park. Although the rejection was based on water and sewage considerations, the main reason for the decision was to

"protect the environment for all the people by controlling land use".

Other developers, including the Horizon Corporation, suspended their plans pending the outcome of the Ton-Da-Lay proposal. Papparazzo stated that he would not submit a revised plan for less dense development, and indicated that he would go to court to test the Commissioner's power over land use, as this had not been legally confirmed.^{17, 18}

The courts

Horizon Corporation subsequently filed a \$36 million damage suit against the Adirondack Park Agency, claiming that the controls imposed under the act had deprived it of almost all economic use of its property and constituted a taking. This was not a constitutional challenge to the validity of the Adirondack Park Agency Act.

The Court of Claims on October 21, 1976 found that "the regulatory act does not constitute a 'de facto' taking for which compensation must be awarded. Although the restrictions are a direct legal constraint upon the economic use of the property, any interest taken is not compensable, since the restrictions merely alter the value of the property and make it infeasible to use the property as planned...Absent a systematic program of acquisition and condemnation, it cannot be said that a land-use measure is necessarily a taking." The court added that the balancing

of public and private interests required by the land restrictions would best be evaluated by the Supreme Court in a test of constitutionality. The claim was dismissed.¹⁹ Horizon later sold the land back to a lumber company.

Ton-Da-Lay brought suit to test the authority of the agency, and this suit is still in the courts. The company proceeded to lay out a subdivision, Jordan River Estates, obtaining all necessary permits from state and local authorities, and in compliance with local zoning and subdivision ordinances. No lots were advertised for sale or sold. The Adirondack Park Agency brought suit to obtain an injunction preventing such sale, stating that the proposed housing densities violated the requirements of the act. The subdivision would contain approximately thirty lots averaging ten acres in size. 90 percent of Ton-Da-Lay's land was classified as "Resource Management" (one single-family home allowed per 42.7 acres) and 10 percent was designated "Rural Use" (one house per 8.5 acres).

Ton-Da-Lay counterclaimed that the act was unconstitutional on several issues:

1. The act repealed the town's zoning ordinances and powers and this conflicts with the Home Rule provision of Local Government;
2. the standards in the act are so vague and indefinite as to constitute an unconstitutional delegation of

- powers to the agency;
3. the act has resulted in a depreciation of private lands in general and defendants' lands in particular, rendering defendants' lands useless for any practical purpose, which depreciation benefits the state of New York;
 4. the restrictions are unconstitutional spot zoning rather than a comprehensive plan; and
 5. it deprives defendants of the use of their property without due process of law and without just compensation.

The State Supreme Court refused to grant an injunction, because the defendants had not shown that they intended to sell the lots without agency approval. However, it stated: "The act is one of the most complex and restrictive planning documents ever promulgated by a legislative body. Whether the act is legitimate invocation of the police power as it applies to the defendants' property is substantially a mixed question of law and fact." It therefore denied the defendants' motion for summary judgment on the grounds that defendant had not supplied a factual basis for its allegations.²⁰

The Adirondack Park Agency appealed the findings. The Appeals Court on February 9, 1978 found that the second, third and fifth counterclaims of the defendant were not a

challenge of the constitutionality of the act as it applied to the defendants' lands, but a challenge of the act itself. The court further held that the act does not impose a total freeze on all development within the park, that it serves a useful purpose, that it is within the constitutional powers of the legislature, that its standards are not so vague and indefinite as to constitute an unconstitutional delegation of powers by the legislature to the plaintiffs, and that it does not constitute unconstitutional spot zoning.²¹

Ton-Da-Lay moved to appeal in November 1978. This motion is pending. It is anticipated that the case may reach the U.S. Supreme Court and have a major impact upon land-use laws across the nation.²²

Summary

This land-use issue concerns state jurisdiction over private land development. Local residents considered the decision prohibiting extensive development an infringement upon their property rights. Although it evolved in the courts into a conflict between out-of-state land developers and the authority of the Adirondack Park Agency, the issue is the conflict between local and state jurisdiction over the use of privately-owned lands.

In addition, this was a political conflict between impoverished upstate New York and affluent downstate New York. Downstate New York wanted the area preserved in

existing uses for environmental and aesthetic reasons. Upstate interests wanted the area developed for financial reasons. The political power structure in the state is such that the downstate interests have historically been in control and this determined the outcome of the issue.

Analysis of the Variables

The primary variables in the case are: (1) resource management, (2) environmental factors, (3) economic system, (4) interest groups and their communications, (5) taxation and law and (6) land tenure.

Secondary variables are: (1) transportation system and (2) value system.

There are no negligible variables.

There are a large number of primary variables in this case because it involves the land-use regulation of private lands on a large scale. Whenever legislation is introduced to limit people's use of their lands, there is extensive conflict. This is a regional issue, confined within a state so that the politics of that state played an important part in the case.

Resource management is the first primary variable. The conflict concerned the introduction of a new form of land use into an area. In addition, there was opposition to the magnitude of this type of land use. The area was rural and isolated, so that intensive development would greatly affect

it. This choice between large-scale second-home development and existing land uses defined the two major interest groups in the case. The group that advocated retaining the status quo for the most part was not composed of residents of the area. It used the political power of the state to accomplish its goals. Local interests made up the pro-development groups, composed of those who would benefit from development. The group advocated a change in land use patterns in the region and fought the Adirondack Park Agency's authority over local land uses.

The variables of environmental factors and the economic system underlie these opposing viewpoints. As wildland in the east becomes more scarce and therefore more valuable, its preservation becomes more important to more various groups for more reasons. Environmental groups and others argued that the natural beauty of the region should be preserved--aesthetic values was one of their reasons for preservation. Other arguments cited the services of the forests in cleaning polluted air from surrounding urban centers and protecting the watersheds that are vital to downstate populations. These were the major arguments of the downstate group.

Upstate New York, however, had other considerations. As an economically depressed region, its residents believed that development would benefit it financially. They argued

that development would provide more jobs and act as a stimulus to the economy. Opponents countered that the jobs would be specialized and seasonal and that the loss of valuable resources would not be matched by the income generated from development.

Taxation and law was also a consideration of the pro-development group. It was argued that development would improve the tax base of the relatively poor counties in the region. Opponents said that the resulting escalation of land values would cause property taxes to increase to such an extent that residents would be forced to sell their lands.

Proponents also argued that local zoning ordinances should supersede state land-use legislation. The usurpation of local authority by the state was a major factor in the issue. Local government agencies were opposing state agencies that had been given regulatory powers by a legislature they regarded as controlled by downstate representatives to an unfair degree.

This brings in the last primary variable, land tenure. Limitations on the use of private land is an issue that is counter to one of the freedoms Americans consider most basic. Personal property rights have historically been considered sacrosanct, and any infringement upon them is regarded generally as both illegal and immoral, especially

when imposed by any authority other than local authority. In this case, there was particular concern expressed that there was no remedy provided for property owners whose land might be devalued.

Transportation system was a secondary variable, although an important one. The improved accessibility of this formerly isolated region because of completion of the interstate highway system only recently made investment economically feasible for large land developers. But for improvements in transportation, there would be no land-use conflict regarding second-home development.

The other secondary variable is value system. There was concern that development should be suitable to the existing culture of the region--that the character of the region should be preserved and that development should impact the region as little as possible, since its existing qualities are its chief asset.

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MT. ROGERS NATIONAL RECREATION AREA

The conflict in this case is not between two services of land, but rather the way that one service is provided. The service is recreation opportunity, and the conflict is between developed recreation and dispersed recreation. The protagonists are the Forest Service and local residents. The time is the present, and the place is the Mt. Rogers National Recreation Area (NRA).

The Community

The Mt. Rogers NRA was established within the Jefferson National Forest in Virginia on May 31, 1966, with the passage of Public Law 89-438. The mandate given by the act was "to provide for the public outdoor recreation use and enjoyment of the area in the vicinity of Mt. Rogers, the highest mountain in the state of Virginia, and to the extent feasible the conservation of scenic, scientific, historic, and other values of the area".

The NRA is located in rural southwestern Virginia and extends like a long, narrow index finger for a distance of approximately 55 miles from the Virginia-Tennessee border in the southwest to the New River in the northeast. Its boundaries encompass 154,000 acres in five counties, with 107,660 of these acres in federal ownership. Since passage of the NRA Act in 1966 approximately 23,660 acres of private

inholdings have been acquired, most from willing sellers, but some by condemnation; however, substantial inholdings remain, as 30,500 acres within the NRA boundaries are in private ownership. An additional 3,750 acres of national forest lands bordering the NRA are managed in conjunction with it, and Grayson Highlands State Park, containing 6,000 acres, is adjacent to it and is presently being developed to provide overnight riding facilities, cabins, hotels, motels, a restaurant, and riding stables.

The NRA lies within two distinctly different physiographic provinces--the Valley and Ridge in the north, and the more rugged and mountainous Blue Ridge in the south--and contains three prominent mountains--Pine Mountain, Whitetop, and Mount Rogers, the highest peak in Virginia at an elevation of 5,729 feet. Its general physiography consists of high mountain ranges, valley uplands, and bottomlands. Elevations range upward from 2,000 feet. Soils are for the most part loamy, and over the varied terrain and elevations they support a wide variety of vegetation. This is a region of alpine meadows, coniferous and hardwood forests, and valley farmlands. A spruce-fir alpine-type forest found on Mt. Rogers and surrounding peaks above the 4,500-foot contour is one of the last surviving remnants of a coniferous forest that extended for hundreds of miles in front of an enormous ice cap during the glacial

era. This rare glacial-front forest covers less than 3,500 acres. Portions of the upland are in alpine meadows, retained in their open state by grazing and fires. These meadows cover 2,370 acres above 4,000 feet and are characterized by rocky outcrops and grassy glades with blueberries, huckleberries, and similar vegetation. They are purposely grazed by domesticated livestock to maintain their open quality, as are other tracts of land within the NRA.

A northern hardwood forest (beech-birch-maple) is found between 3,500 feet and 4,500 feet, while Appalachian hardwoods (oak-hickory) predominate at lower elevations on dry ridges, with cove hardwoods (poplar, walnut, and associated species) in the moist coves. White pine occurs above approximately 2,600 feet, and to add to the variety a tree species thought to be extinct, the round-leaf birch, has been found on NRA land. In the valleys are farmlands and pastures.

The varied habitat supports a variety of wildlife--most of the Appalachian species of mammals and game birds--as well as two rare species of salamanders. Pine Mountain high country is a flyway for migratory birds, where peregrine falcons and eagles are seen occasionally. The area is thus valuable for birdwatchers and other non-hunting wildlife users such as scientific researchers, and is extremely

popular too with hunters and fishermen.

The NRA is within the watersheds of the Holston and New Rivers and contains many trout streams as well as two small impounded lakes. The streams are stocked with trout, which require cold water of high quality, and are an increasingly rare resource. Warm water fishing can be found in the rivers and streams of the neighboring area.

There are several small towns within the NRA, the town of Troutdale (population 209) being the largest. The surrounding area in general is sparsely populated and largely rural. The town of Damascus (population 1,230) directly borders the NRA, and larger population centers are found at Galax (6,278), Wytheville (6,069), Bristol (14,857), and Marion (8,158). Industry that does exist is called the "splinters and rags" type: small sawmills and textile mills. Recent economic growth in the area has been in manufacturing, which employs 41 percent of the work force, and in tourism. It is estimated that in 1972, approximately \$26 million was spent by travelers in the five-county area, and this is one of the justifications cited in defense of development of the NRA.

The favorable climate and limestone-based soils in the valleys of the Ridge and Valley Province produce good pastures, and beef and dairy cattle are an important crop. This makes the range lands of the NRA very valuable to

farmers in the area. Cabbage and burley tobacco are raised as cash crops; Washington County is the largest producer of burley tobacco in the state.

After several decades of out-migration, from 1960 to 1970 the population in the vicinity of the NRA stabilized. The culture is southern Appalachian. It has been relatively isolated, both because of geographic constraints and because of the lack of transportation facilities; and as a result the people might be considered to be relatively independent and self-sufficient.

The area is not affluent. Both per-capita and family incomes are well below the state and federal levels, with per-capita income less than 60 percent of that in the rest of the state. These figures, however, can only indicate that the area is not affluent, for a low per-capita income in a rural area may support a relatively high quality of life, simply because of peoples' different values (different wants and "needs") and because food and other raw materials (timber, gravel, etc.) are readily available. A rural community--community in the sense of the whole area, not just the population centers--may be to a great degree self-sufficient because of the availability of natural resources.

Transportation in the area was opened up with the completion of Interstate 81, running parallel to the NRA on the north, and I-77, which runs in a north-south direction

on its eastern boundary. Travel within the NRA itself, however, is limited because of its topography. The long axis of the NRA extends along the Iron Mountain range from southwest to northeast, and thus travel in this direction is difficult. Traffic is channeled through the north-south valleys on state highways intended to serve local residential and farm traffic. There is one east-west road connecting Troutdale and Konnarock, two small towns within the NRA. This road bisects the western half of the NRA and is therefore very important. In addition, the Forest Service has 84.7 miles of low-volume gravel roads, traveled for resource utilization and management as well as for a "primitive driving experience", and 52.1 miles of "minimum standard" or "primitive" roads which, while used periodically for resource management and fire control, serve primarily as access roads for hunters and fishermen. Roads in the whole NRA are geared toward local traffic and dispersed recreation users and not toward through traffic and high-speed or volume travel. Also much of the area is inaccessible for resource protection, management, or utilization, as Forest Service land acquisitions have consisted largely of the less desirable mountain tops and slopes, while the more desirable agricultural bottomlands have remained in private hands, limiting the opportunities for public access and acquisition of rights-of-way.

The construction and maintenance of roads is of necessity dependent upon budgetary constraints, and as a result, road closings may be necessary at any time and may both affect and be affected by such factors as proposed timber sales, since here vehicular access is a prime consideration. The standard of roads both in and near the NRA varies greatly. Financial responsibility is divided among the Forest Service, the Federal Highway Administration, and the Virginia Department of Highways and Transportation and is dependent upon the availability of funds in each of these agencies. Many of the roads are county roads, and as these counties are relatively poor, road-maintenance funds may be limited.

Rail service is available along the Great Valley to Wytheville, Marion, Abingdon and Bristol, and to Galax on the eastern side of the Iron Mountain range. This has made possible the transport of wood and other products from the NRA to midwestern and southeastern markets.

The Mt. Rogers Planning District Commission is the regional planning agency for the State of Virginia. It covers the counties of Washington, Smyth, and Wythe, which make up the northern part of the NRA; Grayson and Carroll, the southern part; the two cities of Bristol and Galax; and the county of Bland, again to the north but not a part of the NRA. The Commission published a land-use plan for the

area in 1973, and this will become the official land-use plan for the region when approved by local governments. To date this has not occurred.

Forest services

The forest uses in the NRA are recreation (including wildlife), timber, and range, although watershed protection is important as well.

Recreation opportunity. Dispersed recreation has been the goal of the resource managers. This is defined by the Forest Service as recreation requiring relatively extensive areas of land, rather than that confined to a developed site. Such activities as hunting, fishing, backpacking, nature study, birdwatching, photography, bicycling, horseback riding, and cross-country skiing are among the most popular. The NRA has 94.5 miles of hiking trails with trail shelters and 30 miles of horse trails. It contains 44.5 miles of the Appalachian Trail, which winds through the western part and which had 11,600 visitor-days of use in Fiscal Year 1975 (October 1, 1974 to September 30, 1975). Hiking, backpacking, and primitive camping on the NRA is increasing rapidly, and use by four-wheel-drive vehicles and motorcycles is growing since the managers added an off-road-vehicle (ORV) program. In addition to the trail system and livery, developed facilities include primitive campgrounds and picnic areas as well as interpretive facilities and

observation sites. In 1977 there were more than 500,000 visitors to the NRA, a ten percent increase over the previous year. The majority of the visitors were from Virginia, North Carolina, and Tennessee. Use tends to be relatively local and dispersed, with hunting and fishing still the most popular forms of recreation. At present, hunters and fishermen spend 73,000 visitor-days annually in the area. With its scenic beauty and natural resources, rugged topography and rural character, dispersed recreation opportunity can be provided at a relatively low cost and with minimal impact upon the area as a whole.

There are several other major parks in the general area, which furnish more developed forms of recreation opportunity and are planned for high-intensity use. Grayson Highlands State Park borders the NRA, Hungry Mother State Park is 20 miles to the north, and Claytor Lake State Park is 50 miles to the northeast. All have highly developed facilities, and the latter two have water sports available, in addition to dispersed activities. The Blue Ridge Parkway, 15 miles to the south, is a scenic highway national park with a wide range of both developed facilities and dispersed recreation opportunities, and South Holston Lake, a TVA impoundment located south of the NRA, has water-based recreation facilities. Thus southwestern Virginia presently has a wide range of parks and facilities to satisfy all

types of recreationists.

Timber. The present timber-management program yields an average annual cut of from 3 to 4.6 million board feet, with revenues in 1973 dollars ranging from \$27,000 to \$69,000. While sawtimber markets in the area are good, the pulpwood market is limited. The nearest market is 75 miles away, and this limits cutting, as most of the timber on the NRA is of pulpwood size. As mentioned before, many areas within the NRA are inaccessible and difficult to manage, because of excessive slopes or lack of vehicular access. To manage the entire NRA more roads will be needed, and their development cost may exceed the value of the timber.

Forest lands on the NRA total 108,600 acres, 99 percent classified as commercial. The commercial lands are subdivided into five classifications: (1) standard, (2) marginal, (3) special, (4) commercial forest reserve, and (5) recreation sites. Each of these requires a specific type of management. On the standard-classification lands, which make up 43 percent of the total, current timber-management practices will not disturb other resources. Marginal lands are 12 percent of the total; 13 percent are special lands designated for special objectives in the multiple-use plan (e.g., landscape treatment); reserve forests (productive lands withdrawn by statute or regulation) comprise 10 percent; recreation lands, where

timber harvesting is permissible but not a goal, are 9 percent of the total; and 12 percent of the forest lands have not been inventoried.

Although the timber-management goal on the NRA is for a fully-regulated forest with 20 percent of its area in each 20-year age class, that goal is still far distant. For example, only 11 percent of the commercial acreage is in the 0-20 year age class, while 39 percent is in the 41-60 year age class. The Forest Service states that the primary objective of timber harvesting on the NRA is to benefit wildlife. However, another increasingly important use of the timber resource is for fuelwood. In 1977, the NRA issued 1,508 free-use firewood permits, accounting for 7,540 cords of wood. As people turn to firewood for fuel, this forest usage could increase substantially.

Range. Range in the NRA is a substantial resource, with approximately 1,000 head of sheep and 400 head of cattle per year grazing on the 2,365 acres of the Crest Zone to preserve the open spaces there, about 1,210 acres in secondary range, and 1,044 acres in low-country privately-owned grazing tracts. There are few conflicts between the dispersed recreation use of the NRA and livestock grazing.

Water. As in all other areas of the country, concern for the quality of water is great. Several NRA streams have been contaminated both by bacterial and sedimentary

pollution. Sediment originates from abandoned manganese strip mines, Forest Service roads, and stream banks and beds; while bacterial pollution sources are campgrounds, beaver ponds, and Troutdale's garbage dump. Water quality in general, however, is excellent. As the trout fisheries require cold, clear water, and springs and wells are sources of water for campgrounds, the Forest Service is very concerned with maintaining this quality.

The present combination of services from the NRA--dispersed recreation, timber, and range--has appeared to meld with the surrounding area in a manner that has not caused any substantial land-use conflicts.

The Plan

A Management Guide and Recreation Plan for the NRA was approved by the Chief of the Forest Service in 1968. This plan included management direction for a five-year period and a theme for the NRA: Rural America. The plan directed basic development of the area and proposed five major recreation complexes, a scenic highway, and a ski facility.

This plan was to have been replaced in 1973 by a long-range plan, but the latter was not completed and made public until February 1, 1978. At that time, the Forest Service published a draft environmental impact statement for the NRA, one for the proposed scenic highway, long-range proposals for the NRA, and a ten-year unit plan for the

area. The unit plan provided management direction for all proposed activities during this period, and the public for the first time learned what specific developments were being proposed and what their impacts upon the surrounding area might be.

The NRA is proposed to be a "terminal" area--that is, a major destination for travelers, rather than a site for local or even regional use. The plan states that the NRA is located within 500 miles of an estimated 70 million people. A third of the U.S. population is within a day's drive, and this justifies its extensive development, particularly since it is in the East, where there are large population centers and an increasing demand for more outdoor-recreation facilities. It is predicted that the NRA will draw visitors from the eastern seaboard metropolitan areas, the Great Lakes metropolitan area, and the Southeast. The plan sets a goal of accommodating five million visitor-use days by the year 2000. (A visitor-use day is a twelve-hour period of use--either one person for twelve hours, twelve persons for one hour, or any combination in between.) This is the basis for development, with an interim goal of 2.5 million visitor-use days by 1985.

To accomplish these goals, the Forest Service proposes the following development and management program.

Development

(1) Roads and trails. The nucleus of the NRA plan is a 63-mile scenic highway, similar to the Blue Ridge Parkway 15 miles to the east, which will follow the ridge of the Iron Mountain Range and extend along the long axis of the NRA from Damascus in the southwest to I-77 and the New River to the northeast. It will be a low-speed, two-lane roadway with overlooks designed specifically for scenic viewing. It is anticipated that the average daily traffic will be about 2,000 vehicles. Bicycle lanes will not be provided because of the grades, but bicycling will be encouraged on secondary roads. The purpose of the highway is to make the area more accessible to visitors, while providing opportunities for sightseeing. Because the scenic highway will provide access throughout the NRA, all other development plans are based upon its being built.

Additional roads and trails include 56 miles of recreation access roads, 41 miles of timber access roads and 51 miles of visitor information service roads. Footpaths and recreation trails will also be built.

(2) Eight major recreation complexes. These complexes will have highly developed campground facilities for recreational vehicles, with water, sewage, and lighting systems; concession areas; amphitheaters; and impoundments of streams at most sites to form bathing and fishing lakes with bathhouses. These developed sites will serve

approximately 15,470 persons at one time.

(3) Ski resort on Pine Mountain. The Pine Mountain ski area is planned for long-range development to give local governments time to arrange for adequate land-use controls. It will not include land for second-home or subdivision development, and so the Forest Service will not start the project until the town of Troutdale and Grayson County, which will be greatly affected by it, are prepared to cope with the expected environmental impacts. It will be developed by private capital under a use permit issued by the Forest Service and will be a year-round recreation area, used as a base for dispersed activities in the spring, summer, and fall. The area as planned will support 3,500 skiers a day with eight aerial lifts and three lodges.

(4) Dispersed recreation facilities. 108,000 acres of the NRA will serve as an extensive land base for dispersed recreation. The trend in outdoor recreation is toward increased public participation in dispersed activities, particularly bicycling, backpacking, and ORV use. The present ORV program will be extended, more hiking trails will be constructed to provide 222 miles of trails with eight shelters, and nine primitive campgrounds with minimal facilities will be built for tent campers.

Management

(1) Wilderness. Three areas totaling 6,444 acres, each

containing a high-quality stream, will be managed as wilderness areas. Natural plant succession will be allowed to progress undisturbed, and no motor-vehicle use will be permitted. Use on these areas will be monitored so there will be no resulting adverse environmental impacts.

(2) Crest Zone. No motor vehicles will be permitted in this fragile alpine environment, and horse and hiking trails will be located so as to minimize impacts. The area has spectacular scenery as a result of the high elevations and open terrain. Management is required to maintain these open areas, so grazing will be permitted in specified pastures, and dispersed use--such as backpacking, hunting, and fishing--will be allowed. All structures will be removed, no mining will be permitted, and only salvage timber will be harvested.

(3) Timber. The proposed timber access road system will help to accomplish the goals of improved wildlife habitat and a completely regulated forest, and it is estimated that by 1985 a total of 46 million board feet will have been harvested. One thousand acres of northern hardwoods will be under uneven-aged management with 6,340 acres under even-aged management. The proposed management program will yield an average annual cut of 3 to 4.6 million board feet from approximately 834 acres, 489 acres being clearcut.

(4) Wildlife. Habitat improvement is the main goal for wildlife management to produce both hunting and nonhunting opportunity. Approximately equal emphasis will be given to the management of both types of wildlife use.

An aggressive wildlife habitat-improvement program using intensive timber-management practices will produce improved huntable populations of game animals for the large group of hunters who use the NRA, although it is estimated that as visitor use increases, hunting will decline and nonhunting wildlife use will increase.

Since the trout streams on the NRA are of very high quality, trout fishing is popular and expected to become more so. Although there are no warm water fishing opportunities on the NRA itself, the assumption is that demands for both types of fishing will increase. It is proposed that stream-improvement structures be constructed on stocked trout streams and that two existing impoundments be stocked and more impoundments created. Thus existing trout streams will be protected and enhanced and warm-water fishing will be provided.

(5) Range. The Crest Zone acreage will be available for grazing to cattlemen or farmers in the area on a permit basis, while landscape architects will identify open spaces in the valleys that can be used for grazing to maintain the Rural America theme. This will be a relatively small

acreage. Some privately-owned pastures are included in lands to be acquired, and permits for grazing on these lands will be issued only until recreation development begins.

(6) Water. The Forest Service plans to maintain vegetative strips along all permanent and intermittent streams and maintain water-quality monitoring stations throughout the area to preserve water quality.

(7) Mining. There are no mines operating on federal lands in the NRA, nor on lands planned for federal acquisition. There are, however, lead and zinc underground-mining operations adjacent to the NRA in the northeast and outstanding mineral rights on 6,915 acres of national forest lands. These rights will be acquired or subordinated to surface use in the proposed special management zones, the proposed development complexes, and the scenic highway corridor. Manganese was strip mined in the NRA from 1945 to 1957, and inadequate restoration has caused some environmental degradation. As these lands come into federal ownership, the Forest Service will rehabilitate them.

Land acquisition

To accomplish its management objectives under the NRA Plan, the Forest Service will acquire an additional 10,720 acres of private land inside the NRA and 273 acres of private land outside and adjacent to the NRA. Of these, 8,583 specific acres are needed (including the 273 acres) to

accomplish the recreation objectives of the plan and these will be taken by condemnation if necessary. Conservation easements on 2,410 acres are necessary (eminent domain may be needed), and 5,717 acres will be acquired on a willing-seller basis when available. There will be a displacement of families from 25 occupied dwellings. Total federal ownership of land in the NRA will be brought to 123,500 acres, or 80 percent of all the land within its boundaries.¹

The Issue

After the plan and environmental impact statement were published February 1, 1978, the public was given until April 3 to review them and make comments, which the Forest Service would then consider in its final drafts. The Service had not anticipated the response. From the day of publication, local newspapers were full of editorials and letters-to-the-editor, citizen groups were formed, and the public meetings that the Forest Service held to explain the plan were jammed. The immediate reaction was that both documents were so complex and difficult to comprehend--in the words of one man, "written by bureaucrats for bureaucrats"--that it would be impossible for the public to evaluate them adequately within the allotted 60 days. By the time the statements were available to the public, it was the middle of February, and few copies were available. Most of the public's information came from newspapers and hearings.

The Forest Service, after publication of the two documents, instituted a "public involvement program". This consisted of nine meetings throughout the NRA, at which the public could discuss the statements with a Forest Service representative. The meetings were held at night so that more people could attend them. In addition, tours were conducted through the NRA so that people could see where proposed developments would be located, and Forest Service personnel were available for consultation.

Special hearings were also held concerning the scenic highway in conjunction with the state and federal departments of highways; however, at the NRA meetings no record was made of the comments expressed; rather, only those opinions that were written and sent to the Forest Service supervisor's office in Roanoke would be considered when the final draft was prepared. So while the open meetings allowed citizens to express their opinions, in effect these opinions would have no bearing on the final outcome unless they were sent to Roanoke.² In practice, however, the amount of opposition and the involvement of a relatively large number of citizens were bound to influence Forest Service policy, and the agency extended the review date to July 3 upon a request by the Chairmen of the Boards of Supervisors of the five counties that are part of the NRA.³

The night meetings consisted of an explanation of the plan and of its predicted environmental impacts, and an account of land acquisitions, both completed and proposed. The reception varied considerably with the location of the hearings. In Independence (population 673), which is ten miles from the NRA, most of those attending were either in favor of the plan or hoped that it would benefit the county, while a few days earlier in Troutdale (population 209 and located within the NRA), a crowd of over 150, much larger and more argumentative than that at Independence, was much more critical. Both these small towns are located in Grayson County, which will feel the main impact of development, but is by far the least populous and affluent of the counties.

Taxation and law

Citizens worried about an increased tax burden, both because of extra property taxes that would result from property value increases and because of tax deficits that must be made up when additional lands would be acquired by the Forest Service and taken off the tax rolls. Another worry voiced was the need for more public services generated by development pressures, again causing property-tax increases. In an area that has difficulty funding needed local services such as schools and roads, and has sewage and water systems only in the larger population centers and

along I-81, the "Great Valley" corridor, the prospect of having to provide more services was a major concern to people with limited incomes and job opportunities.

This statement in the EIS explains their fears: "...construction of proposed developments and the resultant influx of visitors and residents will overload existing state- and county-maintained public facilities and services and require the expenditure of additional state and county funds...Communities such as Troutdale that now have (septic tanks) will, with anticipated population growth, be required to have modern community sewerage systems. Existing law enforcement, fire protection, sanitation and rescue personnel will be inadequate and additional personnel will be needed."

When a property owner of Troutdale (population 209 and average per capita income \$1,914) reads this, he/she is bound to feel threatened. Citizens recently defeated a bond issue for public water in the town, and county governments as well have no present plans for public water or sewage facilities.

Both limited incomes and limited lands appropriate for development affect the counties' ability to provide services. The population of the Mt. Rogers Planning District is 159,412 with a per capita income of \$2,148 (1970). Of the total land in the District, 39 percent is

used for agricultural production, with more than one million acres, mostly forested with excessive slopes, in conservation and recreation use (the predominant land uses in the District). Approximately 51 percent of the land in the District has slopes in excess of 15 percent, which is prohibitive for large-scale development requiring roads, septic tanks, and other facilities. Also, much of the soils on the District are inadequate for these purposes. The gentle topography in the "Great Valley" land corridor along I-81 on the northern side of the NRA has encouraged extensive development in that region, while those counties with much less favorable terrain will be under the most pressure for increased development and services. Grayson County is the best example of this, as 67 percent of its land has slopes greater than 15 percent, yet both the ski resort and several recreation complexes are to be located there.

Solid waste disposal is just one example of a needed service that is dependent upon geological conditions. The Forest Service presently contracts with county governments for trash disposal at county landfills. The five million visitor-use day goal will increase that quantity of garbage astronomically and the counties will have to provide the waste disposal service. In an area where appropriate sites are limited both by soils and topography (not to mention the

fact that no one wants a landfill near them) this will not be an easy matter. In addition to aesthetic or environmental costs, the financial costs as well will fall on the local taxpayers.

Citizens worry that these increased tax burdens may be more than they can support, and cause them to lose their lands. Again quoting from the EIS: "Land costs and property taxes in and near the NRA will increase", and "Landowners with low incomes who do not have the skill necessary to secure new or supplemental sources of income will have difficulty in paying the increased costs and may be forced to sell all or part of their property."¹ As one man expressed it in a letter-to-the-editor: "Where does this leave the old, the retired, the disabled, and people on fixed incomes?"²

Another factor affecting the tax base is that the Forest Service manages approximately 230,000 acres of public lands in the District within the purchase boundaries of the Jefferson National Forest. These lands are removed from local tax rolls and yearly payments are made by the federal government to each county based on the amount of Forest Service acreage in that county. In 1911 the Weeks Law as amended stipulated that 25 percent of certain receipts from national forest lands be returned to the counties where the lands are located. This meant that the amount of payments

depended upon the productivity of the lands, and in areas like southwest Virginia where national forests are relatively unproductive, payments would be minimal, regardless of the fact that substantial acreages were involved. In Washington County, for example, payments under the Weeks Law were \$1,225 in 1977 for 20,603 acres of Forest Service lands. In 1976 Congress attempted to remedy this imbalance and passed Public Law 94-565, known as the "Payments-in-Lieu-of-Taxes-Act". Under this legislation 75 cents per acre of Forest Service land is paid to each county if the 25 percent of receipts specified under the Weeks Law does not equal at least that amount. In 1977, then, Washington County received an additional \$14,558 to make up the difference between the Weeks Law payment and that specified under the 1976 act. In addition, the Forest Service estimates that counties save one cent per acre of public land, as fire protection is provided by the agency. The Forest Service believes that this savings, together with free firewood, forest products sales, and water, should be included as benefits and added to the cost/benefit tax analysis.*

Economic system

Concern for tax increases is accompanied by doubts that the development of the NRA will be an economic boon to the area, as businessmen and the Forest Service predict.

Although these groups state that the influx of tourists will provide a net financial gain to the area, local citizens question this. In their eyes a net financial gain may be outweighed by a net social loss and they are not even sure that there would be a net financial gain if all economic factors were included in the analysis. Their doubts are echoed in a socio-economic study of the area by Dr. Edwin Rhyne, of the College of William and Mary, entitled "Recreation, Continuity, and Change": "Hence tourist activity with its large demand for service personnel engaged in low-paying, menial tasks will increase the volume of activity and will likely lead to shifts from more inward- to more outward-looking attitudes; yet, it may do little by itself to change significantly income and educational levels."¹

The EIS states that the estimated economic impact of the proposed development in the year 2000 will be an additional 3,272 people employed with an annual payroll of \$12,537,736. The PLOW, a bi-weekly regional newspaper published in Abingdon, used these statistics to determine that these 3,272 people would have an annual wage of \$3,862.39 per person, possibly appropriate for seasonal employees. The editorial states: "Most jobs in the recreation industry are seasonal, low-paying, and menial. Local people will have 'opportunities' to be waitresses,

maids, janitors, groundskeepers, busboys, etc." These comments are echoed in two economic and land-use studies of the area.⁵

The Planning District land-use plan states: "Because of the seasonality of recreation/tourism facilities, their close dependence on national economic conditions, and the large number of low-wage employees, the (NRA) Complex is likely to pump less economic life into the area by increased employment than many of the area's citizens have assumed."¹ Gladstone Associates, an economic consulting firm in Washington, D.C., produced an economic base study for the Mt. Rogers Region in 1970 that stated: "Tourism is not likely to bring economic life to an area by increased employment and expenditures alone, and most tourist expenditures in rural areas have a limited impact on the economy, because substantial portions of goods and services sold in or near a recreation area are procured outside the region."⁶

The EIS figures quoted are gross impacts rather than net. Citizens in the area however, were concerned with net impacts. The PLOW cited a study by the Tennessee State Department of Planning that showed that three resort communities in Sevier County, Tennessee cost the county \$26,000 a year.⁵

Meanwhile, District residents were questioning NRA

development based on their familiarity with the experience of their mountain neighbors to the south, where ski resorts and the Blue Ridge Parkway have been built in nearby North Carolina mountain communities.

At a meeting in Damascus the experience of these areas that have been heavily impacted by recreational development was cited as a warning that "while some people in the area had profited by development, most people were hurt by hidden costs." A resident of a North Carolina county adjoining Grayson County agreed: "As for the money the scenic highway will bring into the area, a few local grocery stores and service stations can expect increased profit. The major concessions will be operated almost entirely by New York corporations or other absentee owners and most of the seasonal jobs will go to college students, so very little money spent in the area will remain here. This is the pattern in all other National Parks and I see no reason to expect Mt. Rogers to be different. Alleghany County in North Carolina heard the same stories before the Blue Ridge Parkway was built. This parkway reduced our tax base by the thousands of acres of land taken off the tax rolls and increased everyone's taxes to make up the loss. The county now sees very little monetary gain for the parkway traffic."

A prevailing opinion was expressed by this Marion,

Virginia man: "I would like for someone to explain, without vague promises, how each individual person will be compensated for his additional tax outlay by these visitors. I submit that instead of compensation, visitors earning higher wages in the cities come here with more money to spend for the same things we need, and prices will rise even further from the grasp of the average worker. How many years would it take to attract new industry that pays higher wages? What would people do in the meantime?"⁷ These citizens want specific answers and do not believe economic projections that take no account of costs.

Many people are not convinced that tourism is a viable industry in a rural area. In the five-county area farms comprise approximately 41 percent of the total land area, and until recently agriculture was its main industry.¹ Following the national trend of a decrease in small farms, the number of people employed in agricultural production in the district is declining and those people still farming are concerned about possible conflicts between tourism and their livelihood.

The EIS also states that: "Approximately 2,100 acres now used for timber production, grazing or cultivation will be removed from production for construction purposes. This will affect not only the direct users of the land, but those businesses that use the products of the land."¹ Again

quoting North Carolina's experience, a Damascus resident stated at the public hearing there: "Developers say North Carolina farmers are simply following a national pattern of leaving the farms. But the national decrease in farm acreage was ten percent while the decrease in Avery County was nearly 40 percent. Farmers admit that it's been getting more difficult to stay on the farm every year because of rising prices, but the financial blow caused by tourism makes farm life almost impossible."⁷

One man, however, saw the question as not a tourism versus no-tourism issue, but rather a tourism versus industry issue. He believed that tourism was the lesser of two evils because tourists don't stay and pollute the countryside. This resident was convinced that industry would come to the area if the existing labor pool remained available.⁹ New industry has, until recently, been the "needle trade"--textile mills and garment factories employing mainly female workers, while males remained on subsistence farms. Recently, however, male-oriented industry is beginning to come to the area, and this may account for the decline in the number of workers employed in agricultural production.¹

Another resident had this comment about tourism: "The whole tourist business is as phony as a three dollar bill anyway. If the NRA really wants urbanites to experience

'Rural America' it is simple; every farmer who needs a couple more hands in the field, put up a sign reading: WANTED: URBANITE TO EXPERIENCE RURAL AMERICA... 'them what don't come', don't want it.'"

The question of the costs and funding of the project is another concern. The EIS is criticized for not only lacking specific cost data, but for the fact that the costs that are included are out-of-date; expressed in 1970 or 1973 dollars. Given the inflationary state of the national economy, opponents say that these figures are of little value. Also, they state that there is no specific cost information for adverse impacts, land acquisition, needed services, and other factors. Citizens, lacking these figures, have focused their comments on the estimated costs of the scenic highway, the central point of development, estimated to cost over \$60 million at an average of \$1.1 million per mile. They question funding for the highway, as well as funding that will be needed to upgrade the existing secondary road system if the highway is constructed. They believe that these are serious questions that have not been adequately addressed by planners.

Federal money is to finance construction within the NRA, but funding for maintenance after the highway is completed is an unanswered question. After construction, the Forest Service wants to turn the highway over to the

state, which would then be responsible for maintenance. The state doesn't appear to want it.

State Senator Danny Byrd, who attended a work session in Wythe County, said that this arrangement would drain state funds and cut into allocations for repairs on secondary roads. Increased traffic on the secondary roads would require more maintenance, and the funds for that kind of work were already low. "With inflation and everything", he added, "it's getting worse all the time." He stated that counties could find themselves in a situation where all of their secondary road money would go to repair the heavily-traveled roads near the scenic highway. Although the Forest Service believes that the highway will alleviate traffic on the roads--and this is a justification for its construction--the Bristol representative of the State Highway Department disagreed. He felt the impact would be "tremendous" and said "The highways we're talking about are inadequate for the light traffic they have now...There's a finite amount of money for secondary roads...If part of it has to satisfy this need, the rest will have to be parceled out to satisfy other needs." He also said that the state has "no commitment" to provide funds for the section of the highway outside the NRA, to acquire rights-of-way, or to maintain any part of the highway if it is constructed. Later, at the Wythe County public hearing the Bristol

District Engineer stated that Virginia will probably not agree to take over maintenance of the scenic highway if it is built. Adequate funds are not available at the present time--or in the foreseeable future.¹⁰ The Planning Commission Plan verifies the need for present area road improvements and the lack of available state funds: "The state admits to a need for improving 102 additional miles of roads in the district in the next five years, but does not currently foresee the funds for these improvements."¹¹

The Forest Service may not have the funds either, as only \$1 million has been allocated for the highway, and while a long-term federal commitment of funds for maintenance would alleviate some of the state's concern, Congressman Wampler, who also attended the work session, noted that funds could only be appropriated by Congress on a year-to-year basis.¹⁰

Citizens wonder whether Congress will appropriate funds for the NRA development given the depressed state of the national economy. In addition, they question whether Congress should. Estimated cost of development excluding the scenic highway is \$200 million. One citizen commented: "The national economy is not in a healthy condition now with an annual deficit of 60 billion dollars...Only inflationary, deficit spending is available to develop an area for recreation. There are more important areas of the economy

that need the government's money and thought, including a balanced federal budget."² A woman at a public meeting was more blunt: "The government can't even make a dent in our national debt, yet it is going to spend millions of dollars on this thing for FUN?"¹²

Environmental factors

Other not-so-specific costs worry citizens. These are costs that the scenic highway will generate in the form of air and water pollution, trash, destruction of wildlife habitat, and people pollution--or overcrowding. In a five-county area where only about 150,000 people live, the two and five million visitor-day projections are alarming.

The Forest Service intends that the scenic highway be a major recreation facility, much like the Blue Ridge Parkway-Skyline Drive. It is to accommodate two million people annually or approximately 35,000 people at one time. On a summer weekend, they estimate there will be 13,000 vehicles in the area per day, with an average overall usage of 2,000 per day, while short peaks of up to 845 vehicles per hour can be accommodated.¹ To the area residents this means both air and people pollution.

A North Carolina man interprets Forest Service user statistics a little differently: "The Forest Service says that the scenic highway will eventually bring five million visitors per year into the Mt. Rogers area. National Park

Service statistics show that in all other National Parks 90 percent of the annual visitors visit the parks during the months of June, July and August--a period of 90 days; thus the scenic highway and the park could expect a total of 4,500,000 visitors during that time. This is an influx of 50,000 people per day. Assuming an average of four persons per vehicle, the scenic highway will carry 12,500 vehicles per day into the park with an equal number leaving...This rate of traffic flow will be one vehicle each 150 feet driving at the maximum speed limit of 45 mph for the entire 63 miles of the parkway. I'd prefer the Los Angeles Freeway."¹³ Whether or not these dire predictions are possible or would occur, area residents looking at the Blue Ridge Parkway-Skyline Drive believe that their fears are justified.

The Skyline Drive extends for 100 miles along the crest of the Blue Ridge and connects with the Blue Ridge Parkway at its southern end. The PLOW makes the point that the highway is less important physically than as a management decision. Because the Shenandoah National Park through which it passes is narrow (as the NRA), the Drive provides easy access to most of the Park. Thus "the Park will be managed to allow maximum access to its resources even if all those visitor days begin to destroy the wonders of the park. It means that those who drive dominate the park". This has

caused extensive conflicts with other user groups such as hikers. While backpacking is increasing everywhere, for the past three years the numbers of backpackers in the park have remained constant while other types of visitation has increased. Robert Jacobsen, superintendent, wonders if "our use hasn't leveled off because people are finding our wilderness experience too limited. Maybe they're hiking in the new wilderness areas of the national forests."

During the fall color season, traffic jams are common--"Travelers from Washington and Richmond, as well as more distant areas, escape from their cities to a world of gas fumes, traffic snarls, and over-burdened eating and service facilities...The Skyline Drive in this instance has become a major attraction in itself which creates massive problems for the staff of the park and may very well prevent the people it has attracted there from enjoying the natural resources of the area."

The Forest Service justifies the need for the scenic highway by stating that it will provide access to the whole NRA. But in the Shenandoah Park, "For many areas of the park, easy access has meant destruction of their beauty", and managers of the area cannot limit use to preserve quality for that very reason--they would have to man barricades to do so.

Not only Shenandoah, but other national parks are

experiencing similar vehicle pollution problems. Yosemite has instituted mass transit and Yellowstone proposes to do so. Both are trying to limit the number and size of trailers and recreation vehicles. Air pollution is prevalent. "Twenty years ago no one worried about automobile pollution in the national parks. Now this is an issue and only a very small amount of information is available upon this subject...many of the assumptions that have ruled the park for years no longer work. It seems ironic that in the Mt. Rogers Unit Plan these same assumptions, often under question elsewhere or indeed being abandoned, still determine the shape of a national recreation area meant to serve the future."⁹

The Forest Service does realize that air pollution may be a problem. The NRA is located in an area where thermal inversions are prevalent (not mentioned in the EIS), and the plan states that during the summer when these inversions occur, campfires may be banned.¹ However, citizens feel that people pollution will be as much of a problem as automobile pollution, causing solid waste disposal and water quality problems, severely affecting wildlife and vegetation, and damaging the fragile ecosystems of the high country. They mention the noise and dust that bulldozers and heavy equipment will make during at least a decade while construction is underway; erosion and water pollution that

this will create; and possible damage to potentially rare vegetation, wildlife species, and geologic formations. There has been no thorough geological or biological survey of the area, and only recently a tree species thought to be extinct, the round-leaf birch, was discovered on the NRA by a biologist from Abingdon. He stated that despite EIS claims that there is no rare or endangered plant or animal life along the scenic highway route, there are at least four rare and endangered species in the NRA, at least one of which is found along the highway route.

As one man expressed his concern: "It has been stated that the Mt. Rogers area is among the oldest unchanged areas in the world, a haven for flora and fauna escaping great climatic extremes and geologic cataclysms. Experts on the delicate balance of nature have confirmed suspicions that the slightest change in such a unique mountain habitat could have devastating effects on the ecosystem."¹⁰

The destruction of wildlife habitat worries hunters--one local hunting club stated that the Iron Mountain Range is "some of the finest wildlife habitat that can be found in the State of Virginia" and warned that the proposed highway would not only destroy this habitat, but cause pollution of trout streams.¹⁴ Non-hunters also voiced concern that wildlife habitat and homes would be disturbed along the entire range, and "pollution and waste are sure to

follow. All this leads to the destruction of our environment."⁹

Waste in this case means trash, and local people are convinced that when you have tourists, you have trash--in particular, "city people" will bring trash into the area. One irate man at an early Grayson County meeting said: "Now, us common people here in the mountains, if you build that scenic highway, we might drive down that highway one time. And you get all this filth coming in here from Baltimore and Washington, that's within a day's drive; brother, don't you tell me we ain't got problems on our hands. Taxes? That ain't it. Filth. Have you ever been in Washington, D.C. or any of these cities? Who's going to clean up all this trash? We will. Not the cotton-pickin' Forestry Department! Right?"¹²

Citizens cite their own experiences in national parks in justifying their worry about turning the national forest into a park. "To see the effect such a project as the Mt. Rogers Recreation Area and the scenic highway will have on wildlife and the environment in general one has only to visit some of the other developed and heavily used national parks. About forty years ago I visited most of the national parks and saw thousands of wild animals plus clean forests and plenty of wild flowers. Last year I visited them again. In Yosemite I saw smog, colorful beer and soft drink cans,

hundreds of dogs tied to trees, but no wild animals and few flowers or shrubs. In Yellowstone we were luckier, we saw one deer, one elk and two moose in two days in the park...As of now all of the area is accessible to those who really wish to see and appreciate the mountains as they are. To the others who only want a place to go for the weekend so they can have a party in their \$20,000 recreational vehicle which has all the comforts of home--let them throw their beer cans out along I-77, I-81, I-95 and the Baltimore-Washington Parkway and stay in a KOA camp somewhere near Richmond or further east."*

The feelings of many residents are expressed by this Konnarock man: "I fully appreciate the scenic beauty, the uncluttered fields and forests, the mountaintops with breathtaking vistas, the clear, cold mountain streams, the pure mountain air and all the esthetic opportunities and challenges this area holds for those who live or visit here. To share, yes. But to be trampled under the feet of 13,000 to 40,000 people a day is to give up these esthetics to the realities of the impact such numbers would make on the area...The scenic highway will bring hundreds of thousands of cars a year, with resultant air pollution from exhaust emissions, which will be compounded by the increase in population and motor vehicle travel in adjacent areas outside the boundaries of the NRA...The Scenic Highway will

irreversibly change the top of Iron Mountain, destroying one of the most beautiful and scenic hiking trails in this area."²

Many feel these scenic trails are a major recreational resource unique to the area and that the scenic highway in effect is a conflicting use: "The easier the access, the more we will have polluted and disturbed conditons in our mountains. We have so few primitive and 'unimproved' areas left to preserve and appreciate. If people want to enjoy the wonderful views from the tops of the ridges, then let them walk in."³ Many residents describe the beauty of the land and the quiet that heals. They describe the clear air, the trees, the plants and even the earth. They can't imagine how people could appreciate the small wonders of the area while driving through in a car. And they believe that if this is the type of recreational experience they want, the Blue Ridge Parkway is only 15 miles away. They believe that the scenic highway, to be built so that people can enjoy the unique beauty of the area, will in fact destroy that uniqueness.

A Bristol man: "The Mt. Rogers National Recreation Area is one of the few remaining places that hunters, campers, backpackers, fishermen, explorers, horseback riders, and nature lovers can enjoy as much as their will to participate in these activities will let them. Because it is a vast

area, when you see a fellow outdoorsman in the backwoods or in the high country crest zone, you know he paid the same admission to get there as you did--he walked or came in by horseback, for there are no roads for the lazy to drive recreational vehicles across this area, where they can throw trash out and pollute the area to kill wildlife accidentally or unlawfully, and to be disrespectful to nature in general. When camping, you do not hear cars or see headlights; it is a place where any true outdoorsman can enjoy and get close to the land."⁹

Presently, NRA use is basically confined to one-eighth of the total area and is centered in the western section in the campgrounds and trails near the high mountains there. The Forest Service feels that the impact of increased usage resulting from the plan will not be as severe as anticipated because it will be dispersed over the entire NRA.²

Citizens disagree. They believe that easy access will cause more problems than it will alleviate. To them, a scenic highway is an inappropriate use of the land. It would destroy or harm the very environmental factors that give the area its uniqueness and beauty--the air, water, wildlife, vegetation and unspoiled vistas. They feel that preservation of these attributes is more important than easy access.

Thus the reason given by the Forest Service as a

justificaton for the highway--easy access--is perceived by citizens to be the reason for not building it.

Transportation system

The focal point of the development plan for the NRA is the scenic highway. The Forest Service states that the highway is necessary to alleviate pressure on secondary roads in the area, while citizens believe the opposite is true--that it will put additional pressure on an inadequate transportation system. They question the need for the highway at all, and think this money could be spent for better purposes--in particular by upgrading existing roads and keeping them in an adequate state of repair.

As a Marion man said: "The people who proposed this highway could not have seen the condition of our secondary road system or they would have given the Highway Department the 60 million dollars to make necessary repairs." Local residents realize that if the highway is built, these roads, which are inadequately maintained now with the small existing traffic load, will be grossly overloaded with anticipated traffic--and that they will have to pay for needed improvements.

In Wythe County the local Farm Bureau, representing 750 farm families, expressed its opposition to the highway at a public hearing requested by the County Board of Supervisors. Its representative recommended that the money that would be

spent on the highway should instead be spent on the county secondary and farm market roads. "If you'd use your legs a little bit," he said, "you wouldn't need a scenic highway." He added that Rt. 58, which runs through the southern part of the NRA from Damascus is already a "scenic highway", and that if it and the two other main north-south valley roads (Rts. 16 and 21) were improved, there would be no need for another highway in the NRA. This feeling is prevalent: "If you want to see the mountains and countryside around Mt. Rogers, there are roads that will take you there now. Rt. 58 from Damascus to Independence is beautiful: and because of its curvy nature, it excludes truck traffic now--making it a scenic highway. The road to the top of Whitetop is a scenic highway that is plenty good enough for mountaintop views for people too lazy to walk to the mountain tops."¹⁵

Local government officials also question the fact that there was no transportation study of access roads into and within the NRA before the scenic highway was proposed. As the Planning Commission said: "recommending a scenic highway before this is done is like 'putting a \$60 million cart before the horse'."⁵ At a work session on April 24 requested by the Wythe County Board of Supervisors the Supervisor of the Jefferson National Forest was questioned about this by the Board Chairman. The Supervisor agreed that the transportation study should have been completed first, but

explained that the Forest Service had been waiting to see whether proposed developments in the area would be approved (the Blue Ridge dams on the New River). This was not decided until 1976. Now, however, the Forest Service was planning such a study and further planning for the highway would be postponed until the study is completed in August 1978. Four alternatives will be considered: (1) the highway is not built and development is limited to already existing facilities; (2) the highway is not built but all other planned development occurs; (3) the highway is built in segments, along with associated recreational developments; and (4) only one segment is built--between State Rts. 16 and 21, the north-south valley routes in the eastern half of the NRA.¹⁰ If any of the last three alternatives is approved, however, citizens' concern about funding will not be answered--because all three will increase the burden on local roads and, citizens feel, on local citizens.

Energy is another question that concerns people. A Tennessee man expressed many people's feelings: "The U.S. Forest Service says this project would create a nice place to take a pleasure drive. Since we are having a fuel shortage and fuel is getting increasingly harder to obtain, should we create another place to take a pleasure drive?"⁹ The recent oil and gas shortages raise the question as to whether a federal scenic highway is not in direct conflict

with our stated national goals of energy conservation, pollution control, and expanded mass transit to limit individual automobile use.

As a resident of Konnarock states: "After reading the Mt. Rogers National Recreation Area Unit Plan and the Scenic Highway Environmental Impact Statement why do I feel like I'm sitting in the middle of a small country about to be invaded by an awesome foreign power?...Can these people really be representing our U.S. Government, when that government is telling us to cut down on gasoline consumption, creating a cabinet level Department of Energy, and trying to reduce our country's dependency on foreign oil? Indeed, the Unit Plan states that the Mt. Rogers NRA will be developed for use by the 70 million people 'located within 500 miles' of this area. In an area of dwindling energy supplies, visitors to the NRA would be encouraged to drive their automobiles greater distances than necessary, burning and consuming gas and oil to get to the 'Wilderness' recreation area. As if this weren't enough, rather than encouraging underexercised Americans to get out of their cars and to walk the many beautiful trails in the area, this foreign power wants to build a 70-mile 'scenic highway' to further ensure maximum fuel consumption..." He goes on to state: "I feel it is time some one actually questioned the original intent of the law that set up the Mt. Rogers NRA.

It was passed by Congress in 1966 and is now out of date, given today's different set of national priorities."9 These questions are raised many times by area residents.

In fact the goals of the plan (to serve 70 million people located within 500 miles of the area) are in conflict with several criteria set forth in Federal Executive Branch Policy Governing the Selection, Establishment, and Administration of National Recreation Areas:

National Recreation Areas should provide recreation opportunities significant enough to assure interstate patronage within the region of service and to a limited extent should attract patronage from outside of the normal service region.

Although nonurban in character, National Recreation Areas should nevertheless be strategically located within easy driving distance; i.e. not more than 250 miles from urban population centers which are to be served.

There is no legislative mandate for a scenic highway, although many citizens think that it was approved by Congress in some fashion. In fact, no specific development was mentioned in the Act of 1966 (P.L. 89-438), other than that the plan should include both summer and winter recreation and permit both hunting and fishing.

Although the EIS intimates that Senate Report 1182 (May, 1966) contains specific objectives for NRA development, in fact the report is simply that--a report on the act from the Committee on Agriculture and Forestry to the Congress--explaining the NRA and recommending passage.

It is in no way a legislative mandate. It contains possible management objectives and plans, and the only mention of a scenic highway is: "A 55-mile recreation way between Damascus and New River to traverse the area and command views of the picturesque farmlands, forested slopes, and alpine meadows is feasible and desirable."¹ Thus the scenic highway was originally part of the Forest Service plan of 1968 and has never been authorized by Congress.

As citizens in the area are not familiar with these facts, they blame Congress as well as the Forest Service. At the Troutdale meeting where opposition to the plan was intense, one angry man asked: "Those Congressmen who proposed this National Recreation Area--how many of them knew what they were doing?"² A Damascus citizen attempted to clarify things in a public statement at the hearing there: "I feel we may have misunderstood the scenic highway as law and not as one sentence in a report two years before the NRA. It is not clear how the feasibility and desirability were determined. Moreover, it would appear that had Congress intended that such a scenic highway be constructed, it would have been explicitly set forth in the Mt. Rogers Act of 1966."³ The feeling is, however, that regardless of who was initially responsible for the proposal, conditions today are not what they were then.

As one man explained: "Since planning for the scenic

highway began, we have experienced a fuel embargo, the resultant depression, a permanent reduction of the highway speed limit to 55 mph, and a doubling in the price of American automobiles. We are becoming conscious of, and sensitive to the need for fuel and resource conservation. Conveyance by private auto is a major contribution to our nation's foreign oil dependency. Any federal project which encourages private vehicle use, as the scenic highway does, should be aborted."¹³ In other words, the planning process should be a flexible one and take into account changing priorities.

A Marion man questioned this inflexibility. "...is it known that on February 8 of this year Brock Adams, Transportation Secretary, announced a shift in federal transportation policy whereby his agency intends to end new highway construction and promote mass transit systems to save energy? How does this affect the need for the scenic highway and the likelihood of funding?"³

One man's answer was to consider mass transit. He suggested changing the road to a scenic railway that would serve not only those unable to travel by private vehicle, but back-country users as well, and expressed surprise that "a federal mandate does not exist which at least requires some consideration of a mass transit alternative to the highway 'transportation system' which is proposed."¹³

Value system

The Appalachian culture is unique. Its traditions have been widely studied and copied and efforts have been made to preserve them so they are not swallowed up and lost in the rush toward modernization, industrialization, and development. Craft fairs, bluegrass festivals, and workshops to teach traditional construction techniques, music, and crafts, are encouraging appreciation of old arts and ways and are found throughout the southern mountains. The people who live in Appalachia are proud of their land, their culture, and their heritage and feel that "outsiders" are threatening it.

Dr. Rhyne says of the area: "...the Southern Appalachians are, and always have been, different from the rest of the nation, and the one word that best summarizes the difference is backwoods ...so it has continued, with the region being either the object of national neglect, benign or not, of national exploitation for its wood and coal, and more recently of national concern (e.g. the Appalachian Regional Commission established in the Kennedy Administration). This latter concern arises because it is an economically and socially backward backwoods. It is within this ambiguous context of neglect, exploitation, and concern, or seeing the region as uniquely American but yet different, that plans for a development in a small portion

of the region must be seen."

The citizens of the area believe that their culture is being ignored in the plan. The EIS analysis of Dr. Rhyne's study states that the area is already changing and that the impact of proposed development upon the whole area will be small. Cultural change that will occur will follow existing national trends toward urbanization and industrialization as the region becomes increasingly more interdependent with other regions. The EIS qualifies this somewhat by noting that the report states that the greatest impacts will occur in the most isolated areas where elements of earlier cultural themes survive, and that these localities will suffer significant cultural and demographic impacts.

The report itself goes into considerably more detail. While noting that each county will differ in the type and amount of impact it will receive, it states that some small areas close to the NRA will be completely transformed while the total area is only slightly changed. For example, "the NRA impact will in two decades remake the landscape, the life style, and the population profile of Kennarock in Washington County while only slightly changing the everyday life and size of Abingdon, the county seat." Washington County is the most "mainstream" of all the counties while Grayson County is the least, yet both will experience fundamental change. "...any community in the upper reaches

of the streams that drain the NRA development that are presently on some kind of usable access will experience profound changes from the NRA development."

At the extreme end of the spectrum are those parcels or neighborhoods that are or will be under land condemnation procedures. This is the most extreme type of impact because it implies the most complete change in human lifeways. For these people the impact of the NRA is clear-cut and irreversible. Whether it will be good or bad will depend upon the individuals concerned. Regardless of this uncertainty, however, Dr. Rhyne states three things of which he is sure:

- 1) The lifeways of such areas will be transformed, whether for good or ill. Troutdale of 1999 will never again be the Troutdale of 1974.
- 2) Each such area will come under pressure from outsiders--for sites, for motels, restaurants, camp-supply stores, trinket shops, etc., in such a way that many of the locals will have to make new lives or else sell out.
- 3) If the community has the support of its local government for moving toward planning and local control of development, it will be better able to decide its fate and to cooperate with the NRA toward fulfillment of rural Americana and the preservation

of a foreground environment supportive of the values implicit in the type of outdoor recreation activity planned.

Thus the effects upon a heavily impacted community will depend not only upon the culture of the community itself, but in which county it is located (Washington or Grayson at the extremes). The support it receives from its county government will determine how it copes with innovation.

Dr. Rhyne also made some characterizations of mountain people that many citizens found objectionable. He stated that the people who will be most severely impacted are "the people who most completely represent the extreme of the 'old America' themes and are thus among those least able to cope with the meeting of the two worlds of backcountry and mainstream. These are the people who are among the most traditional (i.e., land as particular and 'mine'), desirous of making their own way, and least able to deal with the varied ways of people they are not used to living with." This was incorporated in the EIS and many took exception to it.

Another statement in the EIS raised hackles. "The 'mountaineer' is adaptable to the known variations of his familiar world but has trouble adjusting to the unusual. He has a relative lack of skill in seeing or understanding the needs of others, particularly 'outsiders' which will be a

hindrance to reacting to economic opportunities provided by the NRA."¹

Citizens felt that these statements were condescending and typified Forest Service lack of understanding of the people and the culture. Excerpts from the above statement are quoted under the heading: "What the Forest Service Thinks of Us" in the May, 1978 Newsletter of the Citizens for Southwest Virginia, which goes on to say: "Just in case any of you feel the Forest Service has our best interests at heart, here is their description of the 'typical local resident' found on page 69 of the EIS. Quotations are courtesy of the Forest Service."

A Marion man responded to the page 69 quotation: "We mountain people don't hold it against other folks if they want to go to the Big City where they can earn Big Money. We may find it a little strange that someone would want to live in growing concrete but we leave them alone to pursue their happiness. These people...seem to need something happening all the time. They have trouble adjusting to the quiet life and have a relative lack of skill in seeing or understanding the needs of others. To these people we are 'quaint'."³

Other local citizens say: "I am not a native Virginia Mountaineer, being originally from Kentucky, but I must have lived here long enough to pick up the ways of the

Mountaineer because I am having 'trouble adjusting to the unusual' Unit Plan put together by Forest Service 'outsiders'."2

Dr. Rhyne also characterizes the culture of the district as land-loving, individualist, and self-contained, and says that these traits are more obvious in the "backwoods" areas. A Damascus man characterizes his culture a little differently: "Here is one of the most complex sections of America, stereotypes are blurred labels for filing that which, in its complexity, is too immense for such simplicity and narrowness of thought. This is a region, isolated for decades from the mainstream of American culture, whose very isolation may prove its saving grace for the future...Those very traits that a great many other Americans consider backwards or primitive, or yet worse humorous, are the same traits that have preserved our state of nature, created a sense of resourcefulness, and self-reliance, pride, integrity, and independence lacking in so many people today."3

Dr. Rhyne concludes this particular section of his report with these words: "Although the total impact area will not be changed substantially, there will be areas severely impacted...to forget the latter is to forget that among statistical averages are concrete human beings whose lives will be greatly changed, oft-times without their

compliance."¹

A Konnarock man agrees: "And what of the people, that wonderful natural resource we so often forget to conserve!...The impact of the full development of the NRA over the next 20 years cannot correctly be predicted by anyone. It is certain, however, that there will be an enormous effect on our current way of life, the present and future use of our land, and the very quality of our lives. Certainly, there are economic benefits from the development of our area for recreation. But are the economic gains worth the social, cultural, and esthetic losses?"²

In their concern for the preservation of their values is incorporated the ways in which the land is used by the people who inhabit it. Land use is both a determinant of the culture in a given area and a result of that culture. In this district the predominant land use other than conservation and recreation is agriculture. Citizens voice concern that the proposed development threatens this use of land that has historically contributed most to their existing way-of-life.

Rural America. In particular, they feel that the Forest Service's designation of the theme of the NRA as "Rural America" directly conflicts with the proposed development plan. The area is now rural and natural, and a landscape architect's concept of what a rural landscape should look

like does not sit well with people who are dependent upon that same land for their livelihood.

"The NRA wants to change us from a rural, family settlement type community to a tourist-centered, urbanized, vacation home town."²

"The theme of the Mt. Rogers NRA is 'Rural America'. The full development of the NRA with ski slopes, beaches, lodges, parking lots, adjacent development of 'motels, restaurants, souvenir shops, etc.' would be to destroy the real Rural America and replace it with the figment of someone's imagination."²

"Can there truly be a 'rural experience' when as many as 35,000 people per day will be using the NRA and passing through surrounding areas? The private and public facilities to service those visitors will create a semi-urban business and residential area surrounding the NRA. 'Rural America', with its open fields, cows grazing, and lovely wooded areas, will be limited to those artificial sanctuaries protected by the NRA."²

Another resident questioning the plan's impact upon rural life says to the Forest Service: "You see land that to you means development. After all what are the natives doing with it? Farming it, hunting, fishing, hiking and otherwise enjoying it...Now we have progressed to the point that we need to take land from the farmers to provide people from

the city with a place where they can feel like they are closer to nature. Why don't you go into the city and knock down several blocks of slums, tear up the pavement, plant trees and provide people a wilderness area in the city rather than bring the city to us. You will be taking our land, cutting down our trees, polluting our streams, raising our taxes as well as increasing our crime rate. You seem to be under the impression that the people in the mountains are too ignorant to obtain employment outside the area. We live here because we choose to. We choose to because we like our way of life, however unsophisticated it may seem to an outsider. We do not want it changed to the extent the proposed highway and recreation area will change it."³

Another questions changing the rural area to benefit tourists: "No offense intended, but it seems that the demand exceeds the supply for rural America. I see no reason whatsoever to turn any more of it into a playground for those who deserted it with dollar signs in their eyes long ago. Now they see money in the land they deserted and they're coming back."

People continue to emphasize the value they place upon their rural life. "Most of us that live in this area live here by choice. We do not want the congestion and hassle of crowded areas. If we did, we could go to places where there is higher pay...We like our quiet country surroundings and

want to keep it that way. All the money and worldly things around cities can't compare with what we have here. We have to make choices in this life. We have chosen quiet and wide open spaces and we don't want to lose them. Our life moves at a much slower pace than in cities. We have time to see and hear the wonder of nature. If we lose our open spaces we also lose our way of life as we know it. The price is too high. The risk is too great."

Resource management

Residents are concerned with preserving both "Rural America" and wildlands on the NRA. Preservation of both these land uses is dependent upon the "kind" of development that will occur. Citizens realize that some type of management plan will be enacted; the problem is to determine which land uses are appropriate for the area. They frequently note that the region is beautiful now because of Forest Service management in the past. Old-timers remember when the mountainsides were stripped of trees and eroding away before the Forest Service bought the land and restored it. Some feel that because of this past excellent management record, the present plan must be all right. Others question the plan for that very reason. To them it seems a 180 degree shift in management direction on the NRA. And because the Forest Service until now has advocated dispersed recreation use, relatively undeveloped

campgrounds, and open access to Forest Service trails and roads for hunters, hikers and fishermen, this change to intensive development is neither understood nor approved.

Dr. Rhyne notes in this study that this shift in Forest Service management policy is having or will have as much of an impact upon the culture of the Forest Service as upon the culture of the affected area. He notes that the Service was created to aid in preserving and managing a clearly rural phenomenon, forests, located in our "backwoods" areas. Thus it has its own culture or tradition of dealing with these areas and being the broker between them and national policies. "Yet how much of this expertise relative to timber management can be extrapolated to recreation, a comparatively new thing for much of the Forest Service, especially a recreational area of the size and scope of the proposed NRA?" Thus "the Forest Service is itself a part of the impact area and the ways in which its own culture develops and responds will be a part of the impact equation."¹⁷

The opposing points of view in this land-use conflict are illustrated by this exchange concerning management policy. One man took exception to editorial criticisms of the NRA plan in the PLOW. He felt that the newspaper was advocating total exclusiveness of the mountains and asked: "What happened to 'love thy neighbor'?...Why the severe

attacks on the U.S. Forest Service? The only reason your staff, today, next week, and next year, are able to extol the many virtues of this great mountain region is due to the efforts of the U.S. Forest Service in bygone years. Otherwise the entire area would be a vast miserable eyesore."¹⁵

The editors responded: "We don't editorialize for exclusion from the mountains. We welcome visits and new residents, but we don't think the plans conceived by the Forest Service will serve the best interests of the region or its people. No one can deny that the Forest Service has made a vital contribution to the preservation of the mountains. Early timbering operations stripped the mountains bare; the foresters restored them. For that they deserve our praise. However, in the recent years, the Forest Service, like so many other governmental agencies, has lost sight of some of its basic goals. The development plans for the NRA and the concept of an expensive and unnecessary 'scenic highway' on the top of a mountain ridge are, we feel, symptoms of this malady."¹⁵

Those citizens who support the plan feel strongly that the mountains should be shared and that the area should be opened up so that all can enjoy it. One is a woman who has left the area: "I have returned to the mountains as frequently as possible to escape the congestion, pollution,

hustle and bustle of the metropolitan northern Virginia area. The restoring power and healing tranquility have made me frequently wish that more people who need it so desperately could enjoy and benefit from it...It is indeed fortunate that...there is enough vision, and caring that such organized and controlled planning transpires in spite of our human, selfish inclination to want to keep it to ourselves."¹⁰

Two elderly people agree: "We are the elderly, disabled and on fixed income. Don't use us as an excuse. We speak as individuals and from experience. I am 69 years old. My brother is 72. Born and raised in Konnarock...We realize that most of these plans don't benefit us. But we feel it will be good for the people in our community. It does mean progress, and if it helps my neighbor in any way, then we will support the Forest Service...Let the Forest Service improve the land they have and leave our neighbor alone if he doesn't want to sell his land, and at the same time, I will give them credit for protecting our wildlife. They do not destroy as so many seem to think. We do need to share our mountains with others. When you take a vacation to other places such as Smoky Mountains, Beech Mountain, Florida, etc., I wonder how much you would protest if you would see a sign in those states saying 'Keep Out, if you don't live here we don't want you'.."10

Many who oppose the plan, however, do not oppose sharing the NRA with others. It is now public land and as such is available for anyone's enjoyment. They are more than willing to share their resources with others, but they want those resources to be appreciated and not degraded or destroyed. They do object, however, to the magnitude and type of proposed development. They believe it will destroy, rather than preserve, the wildlands and the rural aspect of the NRA and surrounding district. They believe that present Forest Service management is very appropriate and provides a wide range of recreation opportunities.

Citizens worry that the impact of five million visitor days will irreversibly affect the character of the land and for this reason seek at least a modification of the present plan. As one man says: "The immensity of the Forest Service's Unit Plan for the Mt. Rogers NRA begs for moderation and alternatives."² A woman from Troutdale explained: "I value the beauty and unspoiled environment even more because of what I have seen elsewhere. I am happy to share the loveliness with other people, but five million user days seems unnecessarily exploitive and destructive of the environment. I feel that many of the long-time residents who favor this planned development do so only because they have personally never experienced the environmentally and culturally destructive results of such

population pressure. Can't the plans be changed and modified so that this lovely area will remain a real part of rural America that our families and some visitors can enjoy?"²

People worried about wildland preservation voice several reasons for this concern, including both the effects of construction activities and those of visitor use, and the resulting impacts upon air, water, soil, vegetation and animals in the area. Their main argument for preservation, however, is that the area is unique in the East and as such should be preserved.

Although extensive wilderness areas are prevalent in the West, the East with its many large urban areas and widespread development is lacking in large-scale wildlands. While the southern mountains have two national parks that are intensively developed, the national forests have served the population as havens for hikers, backpackers, hunters, fishermen, and other dispersed recreation users. The Jefferson National Forest has been managed for wildlife rather than timber, as the value of the second-growth Appalachian hardwoods has been less than that of wildlife to the region.

Southern Appalachia is a favorite hunting area for people from all over the East, with many hunters coming from the northern states, as well as regional hunters who prefer

these lands. Deer, turkey, bear, squirrel, grouse, quail, trout and raccoon are found on the NRA, with excellent populations of many of these species that presently provide many visitor days of hunter use. However, as visitor use increases, the Forest Service anticipates that big game hunting (deer, turkey and bear) will have to be curtailed. The fishery resource is also important, because of the high-quality, cold-water native trout streams. The EIS states that proposed impoundment would impair these streams.¹ Thus both hunters and fishermen have a stake in the preservation of wildlands, as do non-hunting wildlife users.

Other dispersed recreation users also support preservation, as development will bring about user conflicts. Hikers, backpackers, primitive campers and cross-country skiers do not want to see lights and people and hear cars, radios, and TVs. As a Sugar Grove native says: "I've spent many happy hours since childhood hiking along the proposed route of your highway. To think of a road penetrating the serenity of the wilderness brings me great despair. Beer cans and asphalt--is there any comparison with wildflowers, a night in a sleeping bag without being disturbed by car horns, the sight of a browsing whitetail, or the call of the whippoorwill?"³

These present users of the NRA come to the area because it is wild and primitive, and they believe that there are

few enough such areas in existence now. They also feel that there are enough intensively developed recreation facilities and other recreation opportunities in the vicinity--including all the parks, lakes, and ski resorts--to satisfy those types of users.

So many people, for one reason or another, have an interest in wanting Forest Service management to remain basically as it is, or at least to be geared to dispersed recreation in the future. Yet they speak of preserving the area simply because it is unique and beautiful.

"The National Forest Service says...that this (development) is what our people will need in another ten years. I am not alone when I say that I totally disagree. First of all, in ten years this area of natural beauty...will be more precious than ever because areas of this kind will be unheard of, particularly in the east. And it will be only one day's drive from one-third of our nation's population. A place to totally enjoy nature in whatever manner you wish; to get away from highways, resorts and other unnatural things."

"This is currently one of the cleanest, most beautiful, and unspoiled areas of the high mountains of the East. The cultural traditions of the area are strong and people of the area are developing a growing pride in their Appalachian heritage. I would hate to see this area become another

Gatlinburg, Grandfather Mountain, Pigeon Forge, Cherokee, etc. Preserving this area might, in the long run, prove to be an economic blessing when there are no longer many places left unspoiled like this."8

One Smyth County woman, in writing of the area, expresses why many people feel so strongly about development. "I would love to tell you about a place where I have been many times over the years. I have walked through rolling meadows and pasture fields, cresting to peaks then falling to valleys, then on through the wooded area of a farm in Grayson County at Troutdale, Virginia. A forest it is, laurel, ivy, pines, trees of all descriptions. We have walked for what seemed like miles beside a stream of water as clear as crystal. Where lichens, ferns of all kinds, wildflowers, pines an inch high, fallen trees decayed and covered with growing ferns could be seen. We enjoyed the birds too numerous to mention, all kinds of wildlife, including an occasional deer darting from behind a clump of laurel. Bears have been seen by others.

To crest this summit in spring, summer or fall is beauty beyond words. I have turned as I reached the top, and looked back down. Especially in October, the colors against blue skies are something, called being nearer to God's Heaven than anywhere else on earth. This is only a drop in the bucket to what will be destroyed by the so-

called proposed scenic highway.

How can any group of people want, demand, and try to take everything these people have worked for all their lives? These people are hurt and broken up about the thought of losing all the beauty they have spent a lifetime to create."♦

Land tenure

This concern over land acquisition is probably the foremost criticism of Forest Service policy and is one of the primary sources of friction between the agency and local residents. This might be expected in a rural area that is greatly dependent upon the services of the land. Not only the fact of acquisition itself bothers people, but the uncertainty surrounding the land-acquisition program, and in particular, its limits. As the Citizens' for Southwest Virginia Response to the DEIS states:

...for the past 12 years, NRA land acquisition policies have been cloaked in mystery and conducted in a manner that is mystifying to the average citizen. Not until February of this year was there any public announcement by the Forest Service of the specific lands that are still to be acquired in the NRA. That came with publication of the EIS, with its maps of future acquisitions. Until that time, no citizen whose property lay inside the boundaries of the NRA could be sure whether or not his land would be taken for development.

It would have been far better if the land acquisition policy had been announced, and the lands to be taken identified, 12 years ago. As for the future, there still doesn't appear to be any kind of rational guide to determine which

lands will be taken when or what the priorities for acquisition area.¹⁹

As the Executive Secretary of the Committee wrote: "...my husband and I are due to lose approximately 60 of our 100 acres we own in Troutdale. We feel the Forest Service won't stop until they own all of the Mt. Rogers area!"²⁰

Grayson County is most concerned about land acquisition, as it contains 5,712 of the 8,583 acres that will be taken by eminent domain procedures; but the feeling is one of inevitability--of not being able to fight city hall. The Galax Gazette reported: "Grayson County Administrator: 'We just oppose further condemnation of land...But if they want it, they will get it. You can hire the best lawyer in the world and they'll still win.' The Mayor of Troutdale: 'We don't think we're going to stop it. They can come into the corporate limits. They can take all of Troutdale except a little area where only about 12 families could live.' What are these people talking about? Boll weevils? Martians? No. Just the National Forest Service."²¹ As one man remarked after looking at the map of the new lands designated for acquisition and colored green: "That map gets greener every time I see it"²²

Since 1968, 23,000 acres have been acquired and 49 families have been relocated from homes inside NRA boundaries. Approximately 30 more families will have to leave if plans for the scenic highway are approved. The

PLOW interviewed Willie Wilson in the small community of Elk Creek in Grayson County. His land extends to NRA boundaries and the Forest Service wants at least part of it for the scenic highway right-of-way. This is part of the lands that can be appropriated by eminent domain procedures, although Mr. Wilson can't understand why, because his land is 3,000 feet from the proposed highway, and the right-of-way is supposed to be only 1,000 feet on either side of the roadway. Mr. Wilson says, "I was born here, I was raised here, and I intend to die here. They ain't going to get it without a fight." The Forest Service maps indicate that his home will not be taken, but he is not convinced. "That's all they'll want this time...If it was something that was needed, I'd be glad to give up my land. But this isn't needed at all." And so he refused to let the Forest Service appraiser on his land. Others say they will sell their lands if their homes are spared, and still others do not feel it is possible to fight and win. As another Elk Creek resident said: "Once they decide they want it, there's not a thing in the world you can do."*

One 73-year old man traveled from Elk Creek to Marion to speak against the highway at the public hearings there--a difficult thing for someone who traditionally respects authority. However he said, "Yeah, I'll sell. If they want it...I'll sell the whole thing." When asked where he'll go,

he says " I don't know, I guess I'll have to go someplace else." To pay for his land, which he bought during the Depression, he worked as a brick mason's helper, walking eight miles to work each way and getting up at 3:30 A.M. to do his farm chores.⁸ Mountain people have ties to the land that people who are used to a more impermanent way of life may not be able to understand. It may be difficult for a Forest Service planner to appreciate the fact that these people feel that they are a part of the land. What to a planner is simply a statistic--"Displacement and relocation of the occupants of an estimated twenty houses and five house trailers will result from the proposed land acquisition"--is for those affected a complete upheaval of their lives; in many cases, a forced upheaval.

To the planner, these are relatively few people when compared to the "public good" (the five million visitor-use days for which development is planned). The problem seems to be determining what exactly is the "public good", and which public should be considered--or has been considered. As one man states: "...private ownership and the family farm should take precedence over the public's need for experience levels from 1 to 4."¹³

The EIS, however, recognizes that a financial hardship may be imposed on those families who will be forced to move from their land. "However, for those large families living

in very low valued dwellings or those living on property in which they have only a minor interest...the maximum allowable dwelling or the resident's interest in the dwelling may not be sufficient to pay for a replacement dwelling that meets the housing standards required by the Uniform Relocation Act. This will become a problem in progressively more acquisition cases if the present inflation continues and the maximum replacement housing remains fixed at the present level." The difficulty is convincing the local people that any hardships the proposed plan will cause them are justified.

They also don't understand many Forest Service actions, and this has affected their confidence in the agency's judgment. In other land transactions near Elk Creek, good, flat, easily accessible land was purchased by the Forest Service for \$70 an acre. The owner agreed to sell because he wanted the land preserved and felt that the Forest Service would do this. Soon after, the agency bought relatively inaccessible mountain land for \$300 an acre. The owner of the flat land felt cheated.

Residents also question Forest Service management practices. Behind Mr. Wilson's house in Elk Creek the Service girdled oak trees to kill them, and residents wonder what will become of the wildlife in the area with no mast production. They don't understand why the Forest Service

didn't allow people to cut and use the trees if the agency was going to kill them.⁸ Rural people who live off the land do not understand or condone waste. Although the Service may have had good reasons for their actions, people who live in areas affected by these management decisions do not understand them. They see only unfairness, waste, and destruction, which makes them distrustful. In particular they wonder why, when the Forest Service states that development plans are tentative and won't go into effect until the final EIS is approved and that public input will be considered before the final EIS is drafted, the agency is proceeding with land condemnation and clearing rights-of-way.²

As one woman in summarizing her feelings about land acquisition succinctly put it: "We don't mind sharing, but we do not want to be displaced. My father always said, 'We like comers and goers, but damn the comers and stayers."²

Interest groups and their communications

As of 1978, the level of use on the NRA is about 75 percent of estimated carrying capacity with 650,000 visitors, or 460,000 visitor-use days per year. Yearly capacity at presently developed sites is 868,700 persons. There are five campgrounds that can handle 1,410 persons per day, riding trails, picnic areas, and other facilities that can handle 930 persons, and an unspecified number of other

dispersed recreation users (hunters, fishermen, hikers, etc.). The new ten-year plan calls for eight highly developed recreation complexes that can handle 15,475 persons per day, or 1,437,500 persons per year, dispersed recreation use by 962,500 persons per year, a ski resort with a capacity of 3,500 persons (to be developed later), and an interpretive program serving 750,000 persons per year.¹

When the plan was published on February 1, 1978 the Forest Service could not understand the magnitude of opposition they encountered. They stated that the initial 1968 plan was "the result of public input" and that the public had had 12 years to discuss, approve, or condemn the plan. "The current plan has included public involvement and evaluation by the Forest Service"--but one could ask which public was involved. "In 1966...a group of citizens formed the Citizens' Development Corporation to help bring about orderly planning and development of the facilities on private land that would be able to take advantage of the things that would happen."²

The passage of NEPA (the National Environmental Policy Act) in 1970 with its requirement of an EIS for all federally funded projects which have a significant impact on the environment revolutionized public participation in the planning process. For the first time the public learned

specific details of plans as well as impacts that could be anticipated. With increased concern for environmental considerations and a growing awareness of their potential power, the public no longer accepted public agency plans without question. Upon publication of their plan for the NRA the Forest Service soon realized that even in rural Appalachia citizens are demanding a voice in land-use decisions that affect them and their way of life.

The Forest Service did not receive criticism of the plan from citizens alone, but also local governments and agencies believed that they had been neglected in the planning process.

The Mount Rogers Planning District Commission in March sent a document to local governments, criticizing the EIS because of its lack of comprehensive studies, as well as its plan for the scenic highway before authorization by Congress and without "sufficiently substantiated justification" for it. Other criticisms of the Commission planners were that: a thorough transportation study of access routes in the NRA should have been completed; there was not a sufficient analysis of the effects of proposed developments on land use, water systems, and lifestyles; the benefits that would be derived were not clear--"in short, state and local taxpayers are being asked to have their federal tax dollars used to increase their state and local tax burdens without

knowing what the economic benefits will be"; an economic feasibility study and in-depth socio-economic impact study should have been completed for the proposed ski resort; and the Forest Service made a "questionable generalization" about the residents of the area (the description of the "mountaineer" quoted previously). The planners felt that this statement was a "contradiction of the concept that employment of local people will be a positive benefit of the proposed development."²

The chairmen of the Boards of Supervisors met to discuss the plans and agreed to ask for an extension of time for public study of the plan--which the Forest Service granted--from April 3 to July 3. As might be expected, there was not complete agreement. Wythe County wanted an extension to September 30, while the Washington County Board (the "mainstream" county described in Dr. Rhyne's study) endorsed the plans, although they wondered about the ability of Rt. 58 to handle expected traffic.²

Wythe County in particular was worried about the plan and their Board requested a meeting with representatives of the Forest Service, area legislators, U.S. Congressmen and Senators, the Virginia Department of Highways and Transportation, and mayors, town councilmen, and members of the county boards of supervisors of the five counties involved. The purpose of the meeting was to gain

information about the plans and the impacts that would result. At this work session the Wythe County Board Chairman criticized the Forest Service planners for not consulting with the Wythe County Planning Commission during preparation of the plans, as Wythe County had been working on a comprehensive plan for the past three years and Forest Service proposals would have a major impact on the county's future. A county planner agreed and asked Forest Service officials to come to local planning Commission meetings to "begin to coordinate more".¹⁸

There evidently was a lack of communication between the agencies, and the Planning Commission staff felt there were some questions that needed answering, which the Forest Service agreed to do:

Question: "What advice and input into the unit plan has the Forest Service sought from local planning commissions?" Answer: "Forest Service efforts to coordinate with local planning commissions and governments have been based on continuous contact with the Planning District Commission. Since the Commission is made up of at least 50 percent elected officials, the Forest Service reasoned both County Boards of Supervisors and County Planning Commissions would be informed by routine coordination with the Planning District Commission." This was evidently not the case. "During 1974 the Forest

Supervisor met with the Planning District Commission and County Boards to outline plans relevant to land acquisition...and the Boards were briefed on scenic highway plans." There is no mention of any meetings with local planning commissions.

Question: "Why were local governments not afforded an opportunity to review and comment on the social and economic impact studies that were done five years ago?" Answer: "The Forest Service reasoned these studies would be most useful and pertinent within the context of the completed Long Range Plan for the National Recreation Area. Consequently the findings were incorporated into the Draft Plan and the EIS. The purpose of the current Draft Unit Plan and EIS review is to afford local governments and others an opportunity to comment on the social and economic studies."²³

From these comments and the criticisms voiced by the Planning District Commission of the completed plan, it would appear that the Forest Service was not concerned with inputs from local planners during the planning process. As a result there is significant opposition from them as well as local citizens. Although the Smyth Board also approved the plan, the Carroll County Planning Commission voted its disapproval of the scenic highway and urged the County Board to do the same.

Legislators as well have criticized the Forest Service. The Grayson County State Delegate objected to the fact that no public meetings were held in Grayson County, where three-fourths of the land is either in the NRA or the Jefferson National Forest, and said that he had been under the impression that no more land would be acquired by condemnation proceedings and was disappointed to learn that another 8,000 or more acres of private lands would be condemned.¹⁴

The Forest Service states in its EIS for the scenic highway: "The planning effort for the Mt. Rogers NRA, including the scenic highway, provided the opportunity for local communities and planning agencies to actively participate over a ten-year period in the planning for the NRA. Consequently, the plans for the surrounding communities not only reflect recognition of the NRA but they also reflect support for the NRA including the scenic highway."¹ There are two fallacies in this statement: (1) local communities and planning agencies do not believe that they have actively participated in the planning; and (2) Carroll and Wythe are the only two of the five counties that have land-use plans: Wythe County feelings have been previously quoted, while the Carroll County Plan, approved by its Board in July, 1978, recommends against construction of the scenic highway through the county.

In effect, then, the Mt. Rogers Unit Plan is a product of Forest Service planners.

Citizens in the area have banded together in an effort to try and effect some changes in Forest Service policy for the NRA, forming a committee called "Citizens for Southwest Virginia". The group is very well organized and has published two Newsletters in May and August of 1978, and a 55-page Response to the Draft Environmental Impact Statements that they have submitted to the Forest Service. The newsletters are professionally written, as is the Response, which is a thorough history and evaluation of the plan. Research assistance was provided by a graduate of MIT in regional planning, assigned by the Department of Commerce to intern with the group. The Committee also circulated a petition, collecting approximately 13,000 signatures, which they forwarded to the Forest Service before the July 3 deadline for public comment. The petition states:

We, the undersigned citizens, petition the U.S. Forest Service to maintain the Mt. Rogers NRA in a manner which will emphasize hiking and horseback trails, hunting and fishing, wise land and water resource development in the interest of posterity, and the development of moderate camping and tourist facilities. We petition the Forest Service to stop the further condemnation of private land; to stop construction of the proposed scenic highway; to stop the proposed development of the Pine Mountain ski resort; to maintain our area so that it can continue to provide a special way of life for residents and a unique experience for visitors. Finally, we petition the Forest Service to work to keep Rural America alive and not turn it into a sideshow for tourists.

The committee is a grassroots organization made up of citizens who live in, or have an interest in, the five counties. Directors are local residents, many of whose families have been in the area for generations. They state these facts specifically in response to "certain prominent officials in the U.S. Forest Service (who) have described those of us who oppose the NRA as 'outsiders and hippies'." The group, while opposed to the extensive development proposed by the Forest Service plan, is not opposed to development per se as their petition indicates. As can be seen in the quotes from citizens' letters-to-the-editor, most citizens also do not feel the question is an either/or proposition--rather it is a question of degree.

The citizens' group praises past Forest Service management:

There was a time when it appeared that Mt. Rogers would suffer the fate experienced by much of the rest of the land in the southern mountains. In the early part of this century, timbering operations devastated the region's forests and left the land in a state which, according to one local resident, "looked like the surface of the moon." The Forest Service was instrumental in reviving the land and bringing it back, if not to its original state, at least to a state where it was once again a valuable and productive resource. The early work of the Forest Service in the Mt. Rogers area (and in the eastern forests generally) is an example of one of the few government programs that has been an almost unqualified success. More than any other institution, perhaps, the Forest Service deserves credit for the survival of the region as an area of recreational and conservation potential.

Indeed, the implementation and administration of the NRA and the recreational planning for the Mt. Rogers NRA provide the Forest Service with a unique opportunity to preserve this historically and naturally important area, while allowing recreation which is consistent with that objective.

Their criticisms focus not only upon the degree of development, but land-acquisition policy, the shortcomings of the EIS, the inflexibility of the planning process itself, and the lack of Forest Service receptiveness to citizen input into the planning process. With reference to the latter, the Response states: "In the 12 years which have passed since the NRA was passed, Forest Service officials have sponsored, or participated in, literally hundreds of meetings with the public. Although these meetings have led to alterations of certain specific elements in the plan for the NRA, the Forest Service has not been receptive to public or other criticisms that challenge the basic assumptions which have guided the NRA planning process since 1966. Despite the changes which have taken place in the region since 1966, the assumptions which stood behind the 1968 plan are the assumptions that are found in the document being examined by the public today."

The Response quotes from The Last Stand, a report on the national forests, which is commenting on the public involvement process: "The new process invites, but does not guarantee, formal public participation in plan formulation.

The emergency directive refers the officials to the Forest Service's Guide to Public Involvement, which merely suggests the holding of public listening sessions. The public will have no defined right to participate in the all-important planning at any stage. Its ability to propose alternative plans and to influence both the choice of a final plan and the review of that choice will depend solely upon the patience and openmindedness of the hundreds of agency officials involved."

With regard to the planning process itself, this is the committee's comment: "To be meaningful, planning must be a dynamic process that can deal simultaneously with the concepts of the past and changes which take place in the present. As conditions change, plans must change, not in a haphazard manner but in a way which compensates for the new while not losing sight of the old.

Unfortunately, this has not taken place with Forest Service plans for the Mt. Rogers NRA...Although it is difficult for a person outside the Forest Service planning team to assess the reasons for this inflexibility of attitude, these explanations seem likely.

1) Forest Service planners have seen their role as that of interpreting what they perceive to be a specific Congressional mandate to develop the NRA. The interpretation of the mandate has been too rigid, and in

some respects, erroneous.

2) As its name suggests, the NRA is a National Recreation Area, and the main emphasis in planning and development has been on the achievement of national priorities to provide recreation opportunities for as many people as possible. As a result, the interests and welfare of the Forest Service's "local constituency" have been subordinated.

3) Conditions have changed so rapidly in the region, funding has been so uncertain, and the NRA planning process is itself so complex, that it has been difficult for Forest Service planners to take new conditions into account.

Regardless of the reasons for the inflexibility of the planning process, the result is that Forest Service plans, as seen in the Draft Environmental Impact statements for the Mt. Rogers NRA and scenic highway are, despite many fine points, outdated, based on incorrect assumptions, and overall, failures as planning documents."¹⁹

The Response points out EIS shortcomings--inaccurate statements, contradictions, and insufficient data--and at least one citizen wonders about the purpose of an EIS: "Why is an environmental impact study done if the results are not used to modify and prevent the destructive effects?"²⁰

In this regard the citizens' group has their doubts about whether the Forest Service really intends to consider

citizen inputs: "Not one word in the entire Information and Education Plan (of the EIS) says anything about receiving information or recommendations from the public. To continue to acquire land for a project that is unauthorized is a tacit admission that public review of the EIS is a sham. It is also, in our view, a violation of the guidelines which govern the NEPA process."¹⁹

The Supervisor of the Jefferson National Forest responded to these criticisms concerning the lack of citizen input into the planning process: "Forest Service people have worked for years to keep local citizens informed of our plans so that they would have an opportunity to offer sound ideas and thoughtful suggestions on how the Mt. Rogers Plan could be improved.

- We've made dozens of presentations to individuals, government, and citizens' groups.
- Made presentations and answered questions on radio and TV.
- Supplied information to the press.
- Conducted field trips for local citizenry.
- Distributed hundreds of copies of the proposed plan to government agencies and individuals.
- Put copies of the proposed plan in libraries and public places.
- Conducted workshops on the fisheries and trails part of the plan.
- Extended the time period for public review.
- Not to mention the many pre-planning public meetings conducted prior to beginning planning efforts."²⁴

Whether citizens are correct in feeling that they have not been included or considered in the planning process, there is now a great quantity of citizen input available to

the Forest Service. As the Response concludes: "The Forest Service has often stated that it wants input from citizens. We have responded to that call. Now the burden of response is on the Forest Service."¹⁹

Summary

If there is one statement to make about the conflict over the proposed Forest Service plan for the Mt. Rogers NRA, it is that the issue is the magnitude of proposed development rather than whether development should occur. The Forest Service has a good record with local citizens. Their main objection to the Service's past management has been its NRA land-acquisition program. In addition to opposing the taking of private lands, citizens protest that there has been no consistency in the acquisition of land and little or no dissemination of information. They do not know what to expect and are afraid that there is no limit to the lands the agency will attempt to acquire. This fear has caused a lack of trust in the Forest Service.

Residents do, however, credit the agency with saving the land after it had been cut over in the early part of this century, and Forest Service development and management of the area has been such that present uses of the land are complementary, rather than conflicting. Rural areas have been preserved, grazing lands are used by the public, and a wide range of dispersed recreation opportunities are

available.

Michael Penfold, Supervisor of the Jefferson National Forest at the time of publication of the plan, and now on temporary assignment to the President's Council on Environmental Quality, cited Forest Service accomplishments on the NRA: "...the hunting and fishing is excellent. Turkey and deer have been reestablished in sufficient populations to allow big game hunting again. And if you just want to observe wildlife, the diversity is hard to match anywhere. Our campgrounds are beautiful and lie gently on the land. They are very pleasant places for people to relax and enjoy. The mountains, once stripped of every stick of timber, are now beautifully forested and are supplying stable amounts of timber to local industry. Water quality is excellent."²⁴

Citizens agree, and that is why they are protesting the plan. They believe that the proposed development will cause degradation of not only the environment, but of existing recreation opportunities on the NRA, and will affect the land use and culture of the area. They believe that their area is unique, and that it is important to protect this uniqueness--that the present blend of forest, farms and towns preserves not only the local culture but the land as well, while providing recreation opportunities not available elsewhere, and becoming increasingly scarce in the populous

east.

Thus the protagonists in the current conflict are the Forest Service and local citizens who are being officially represented by the group, Citizens for Southwest Virginia. These are not the only groups involved, however. A third is composed of local government entities. Depending upon the county in which they are located and their bureaucratic status (e.g. Boards of Supervisors, Planning Commissions), they are either in conflict with the Forest Service or with their own constituencies. Local residents have taken issue with Washington and Smyth Counties' Boards of Supervisors who approved the plan. These two counties have more services--water and sewage--than the others and are the more "mainstream" of the counties, to use Dr. Rhyne's terminology. The Great Valley Corridor and I-81 run through them, and they would benefit more from development than the others. Still, their citizens don't necessarily agree that development is desirable, and threaten to retaliate at the next election.

Both citizens and government agencies believe that they had little or no input into the planning process and that the Forest Service plan was developed for "outsiders" while ignoring the local economy and culture. Whether true or not, the fact that these feelings exist indicates that the Forest Service did not include these groups to the extent

they felt was appropriate and that there was a lack of dissemination of information and an inadequate public relations effort. Since the conflict concerns degrees of development, if the local groups had been included in the planning process, it is possible that some compromises may have been effected and opposition is reduced.

There is still a fourth opposing group that is composed of national environmental organizations who are especially interested in possible environmental damage. These groups have questioned the information used in evaluating these impacts--in particular, the lack of hard, specific scientific data. The National Parks and Conservation Association wrote the Forest Service concerning wildlife management, stating: "There is an alarming lack of current knowledge (considering what is at stake) regarding just what species do inhabit the NRA, their location, and habitat requirements. It is obvious that only the most rudimentary field studies, if any, were done" and goes on to specify both inaccuracies and omissions in the EIS concerning rare and endangered species.

The National Wildlife Federation also criticizes the EIS for not making clear the extent and type of analyses that were done, when they were completed, and by whom. "There is virtually no way to comment intelligently on studies on which no information is provided." The

Federation does not limit these criticisms to studies of wildlife, but is concerned over all environmental elements. The organization also questions whether the data is sufficiently current, cites instances where it is not, and also cites omissions and inaccuracies. Both the Environmental Defense Fund and the Sierra Club have expressed concern over the NRA plan and lawyers for the various groups have been consulted by the Citizens' group concerning legal support if a court case should ensue.

These four groups then are in contention over the plan: (1) the Forest Service, (2) local citizens, (3) local government, and (4) national environmental organizations.

The following characteristics of the Forest Service may have contributed to the existing land-use conflict.

(1) Public agency. As a public agency the Forest Service must manage for the public good. This may be difficult to determine as there are many publics whose wants may be conflicting; e.g. local, regional, national. The key, then, is not only deciding which public to manage for, but reconciling the various demands if managing for more than one public.

(2) Inflexibility. As a government agency, there is built-in inflexibility in the organization. The administrative procedures and red tape that bureaucracy entails limit opportunities for change and stifle initiative

in many cases; also, the manner in which funds are allocated to government agencies may affect the criteria for making management decisions and therefore result in inappropriate management goals; for example, development may be encouraged as a justification for increased appropriations.

(3) EIS requirements. As with any relatively new procedure there are difficulties in ascertaining what information is needed and how to present it. Criticisms of the Mt. Rogers EIS may have resulted from the fact that inexperienced people were writing and analyzing socio-economic and biological aspects of the plan with inadequate available information.

(4) Citizen participation and communications. Public involvement in government agency planning is a recent development. Land-managing agencies, which have historically been required to justify their management decisions for funding authorizations, are not accustomed to justifying them on the grounds of environmental or social considerations. They have not been prepared to deal with a vocal public that is becoming aware that they can have a voice in natural resource planning. It is becoming evident that continuous, honest communication, actual public involvement, and an open-minded, flexible attitude with respect to changing conditions are necessary parts of the planning process. This actual public involvement requires a

change of traditional attitudes on the part of the agency.

In summary, the land-use conflicts in this area revolve around a radical change in management goals on a public land base, the question of whether these goals are appropriate for the specific area (considering both the land and the people, or community), and conflicting views as to which public(s) should be considered in the plan for development.

Analysis of the Variables

It is first necessary to consider the issue (I_{past}). The forest land service in this case is recreation; developed recreation as opposed to dispersed recreation. The protagonists are local residents and the Forest Service. The community is a rural, sparsely populated, relatively isolated area. And the time is 1978. It is necessary to put these dimensions into a holistic context.

Dispersed recreation involves less expenditures both for managers and users than developed recreation. It also has limited facilities, which may exclude some users; and it has less impact on the environment.

The protagonists are local people and a federal agency. Or to put it another way, local interests versus national interests. This, if stated in an either/or context, tends to exacerbate any issue. As a California regional forester stated the problem: "You know, these are national lands, and a wilderness area belongs as much to a person in New York as

it does to the person right on the edge of it. That's really tough to explain to local people...You try to respond to local situations, but you don't compromise the national interest in the process, or national desires."²⁵

The community is poor by national standards. It is self-sufficient and independent with strong ties to the land.

The time is one in which the national economy is in a state of serious inflation, recession, high interest rates and taxes and an energy shortage. Economics is thus a major concern.

The first primary independent variable is environmental factors. This is a variable found in a majority of land use issues, simply because land use always affects the environment to some degree. The more unique the environment, the more heavily weighted this variable is. It should be noted that "unique" as used here is a relative term. A clear creek near a city may be a unique environment. In this case, the variable is a primary one. The region is unique both in its biological diversity as well as its geologic beauty. There is great concern, therefore, for its protection.

The second primary variable is resource management. The issue arose because of a change in Forest Service goals for the area. Although citizens had in some cases objected

to the agency's land management practices, in general they believed that it had done a good job. While the area was available for use by anyone, the agency had not altered the land substantially--in actuality had improved it by protecting it--and local people could continue to use it as they always had. It was only when the agency proposed substantial development--in particular, a scenic highway and other facilities--that residents protested what they felt would be an unwelcome invasion by multitudes of visitors who would neither appreciate nor preserve the natural attributes of the land. Thus a drastic change in resource management and goals triggered the conflict.

To understand this reaction a planner or manager of land must be able to understand the culture or value system that the land has produced and fostered. People who live on the land or depend upon its resources for their sustenance--either physical or metaphysical--acquire feelings for it that are deep and permanent. The Mt. Rogers area is one of spectacular beauty. The high alpine meadows, spruce and fir stands, and far-reaching vistas are rare in the over-populated east. The region is unique and both residents and visitors appreciate its uniqueness. This uniqueness is given great weight in the value system or culture of the people--and in that of the nation as well; i.e. it was designated a National Recreation Area. The

Forest Service felt that more people should be able to appreciate it too--hence a scenic highway. Opponents argue that this very access will destroy its uniqueness.

Interest groups and their communications is the last primary variable in this case and is possibly the one that most affects the character of an issue. Is the issue decided on a legal basis, a political basis, or an economic basis? Does it generate great interest, intensive participation, widespread support or opposition, high feelings, rational compromise, etc. etc.? This is determined by the groups--or protagonists--involved and their communications or public relations efforts.

In this case, local governments and citizens believed--rightly or wrongly--that they were left out of the planning process of the Forest Service. They felt that they had little input and that in addition the Forest Service had not communicated with them to a sufficient extent at any time.

As communications have become more sophisticated, so have people's awareness of their potential. The opposition to the plan mounted an intensive media campaign and succeeded in generating a substantial amount of support. Meanwhile, the Forest Service held public meetings and hearings to explain its point of view and receive comments. There was extensive participation at these also.

This variable is a primary one, generating both extensive and intensive opposition. These four variables then are the most heavily weighted, primary variables.

The remaining variables in the case are secondary variables. Taxes in a not-affluent region are important. In this case the proposed development would require substantial upgrading of existing services in the area, such as roads and sewage and water facilities. Necessary tax funds to either improve or create such services are non-existent. In addition, citizens concerned about present federal tax rates felt that federal tax monies should not be spent on extensive recreational facilities.

Economics enters as a variable that can be either positive or negative, depending upon the viewpoint of the protagonists. The Forest Service contention is that the scenic highway will be an economic boon to the area as it will stimulate tourism. Opponents cite figures that dispute the economic benefits that result from tourism in a rural area, citing the experience of the region bordering them through which the Blue Ridge Parkway passes.

Transportation is also a national factor affecting the issue, because the region is located within driving distance of many eastern population centers and this is one of the reasons for the creation of the NRA. It is also next to another scenic highway--the Blue Ridge Parkway. One of the

most popular national parks in the east, the Parkway is used by opponents of the Forest Service plan as an example of what will happen to their region, as well as a reason for not needing another scenic highway in the same general area.

Land tenure is an important variable as the subject was the focus for citizen opposition prior to this issue. The taking of private lands is deeply resented. In addition, the manner of taking--or perceived inequities--adds to local resentment.

In summary then, pertinent factors were:

Primary variables

- 1) protection or destruction of a unique environment (EF)
- 2) drastic change in resource management and goals (RM)
- 3) national goal overriding local value system (VS)
- 4) perceived lack of adequate communication between a federal agency and a local region (IG)

Secondary variables

- 1) not-affluent area required to provide additional tax revenues (TL)
- 2) economic impacts, both positive and negative (ES)
- 3) increased access and duplication of facilities (TS)
- 4) land appropriation (LT)

Negligible variables

There were no negligible variables in the issue.

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THE SPOTTED OWL

This case is current and concerns the forest services of wood, wildlife and preservation. The place is the Pacific Northwest; in particular, the old-growth Douglas-fir regions of the area. The protagonists include two federal land-managing agencies, the Forest Service (FS) and the Bureau of Land Management (BLM); one wildlife biologist in particular and wildlife biologists in both state and federal agencies in general; and to a lesser extent timber and environmental groups.

The Issue

The rare northern spotted owl, *Strix occidentalis caurina*, inhabits the coniferous forests of the Pacific Northwest and southwest British Columbia. In particular, it prefers old-growth forests--closed canopy forests with trees over 200 years old at densities of more than eight per hectare. In western Oregon, this means old-growth Douglas-fir.¹

This habitat preference or requirement--depending upon your point of view--is the issue. The dependence of the timber industry in the Pacific Northwest on old-growth Douglas-fir cannot be overstated. From a timber management viewpoint, old-growth timber is overmature timber that should be harvested because it is past the point of

culmination of its mean annual increment. It is therefore more economically advantageous to harvest the timber and replant than to allow it to continue growing at an ever-decreasing rate.

The most extensive stands of old-growth in Oregon and Washington are located west of the Cascade Range on the National Forests in the area; in particular the Willamette, Mt. Hood and Umpqua forests in Oregon. The lower elevation, higher site lands owned by private companies have for the most part been liquidated, thus making the area increasingly dependent upon publicly-owned forests.¹

The Economic System

The timber industry of the Pacific Northwest is the prime factor in the region's economy and is an important part of the nation's economy as well, as Oregon and Washington together produce one-fourth of the nation's domestic roundwood. Old-growth is the main source of this supply, with the Douglas-fir region (that area west of the crest of the Cascade Range) producing 83 percent of the area's total timber harvest in 1970. From a forestry perspective, then, in addition to the importance of the region itself and the old-growth Douglas-fir within that region, the public lands on which that timber is grown are becoming increasingly important as private lands are being depleted.

The peak of cutting on private lands in the Douglas-fir region occurred in 1952. By the 1960's the majority of old-growth on these lands was gone and western Oregon's private timber harvest had decreased 52 percent from its peak in 1952 to only 3.9 million board feet in 1970. In contrast, the proportion of old-growth harvested on public lands had increased and by 1970 accounted for 47 percent of the total harvest of western Oregon. This dependency on the public land base will continue as 67 percent of the remaining softwood sawtimber inventory of the region is on publicly-owned land.² The economic impact of the public lands on the region can be seen in the following statistics. In 1978 the timber sold from National Forest lands was valued at \$665,714,195 in Oregon and \$174,975,421 in Washington.³ Timber sold from Bureau of Land Management lands in Oregon was valued at \$217,953,604 and in Washington at \$6,668.⁴

Land Tenure

These two agencies, the Forest Service and BLM, are the major trustees of public lands in the region. The Forest Service manages 15,498,296 acres in Oregon and 9,068,984 in Washington,³ while BLM lands are concentrated mainly in Oregon with 2,173,000 acres of commercial forest lands in that state and only 38,000 in Washington.⁴ Oregon is thus the focus for concern.

In 1970 National Forests were the largest single log-

producing ownership in western Oregon, producing 30 percent of the total log harvest, while BLM accounted for 15 percent.² Of this total 80 percent was old growth. The majority of old-growth in western Oregon is on National Forests with over 1.5 million acres a conservative estimate.¹ Most BLM lands are O & C Lands (Oregon and California Railroad Lands). These are alternate sections of land which the government granted to the railroads and subsequently repossessed when the terms of the agreement were violated. These lands are regulated under the O & C Act of 1937 which states that such lands:

...shall be managed...for permanent forest production, and the timber thereon shall be sold, cut and removed in conformity with the principle of sustained yield for the purpose of providing a permanent source of timber supply, protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries, and providing recreational facilities (43 USC 1181a).

This was interpreted by BLM as a mandate for timber production as a primary use until the passage of their Organic Act in 1976 (the Federal Lands Policy and Management Act) which gave them a mandate for multiple use on all lands that they managed--including the O & C Lands.¹

We thus have a timber-producing region that is heavily dependent upon old-growth Douglas-fir growing on the public lands of two federal agencies mandated by law to manage for multiple use.

Environmental Factors

or

Old Growth and the Owl

As the amount of existing old-growth has decreased, an increasing amount of research is being conducted on this type of ecosystem to determine both its structural characteristics and the flora and fauna either partially or totally dependent upon old-growth habitat. In 1972 the Forest Service funded a study on the northern spotted owl, one such species, to be conducted by Eric Forsman, a graduate student at Oregon State University.¹

The spotted owl had entered the picture in Oregon in 1969, when the Fish and Wildlife Service listed the owl as an "Oregon Endangered Bird Not on the National List" in their report on Endangered Plants and Animals of Oregon.

An endangered species or subspecies is one whose prospects of survival and reproduction are in immediate jeopardy. Its peril may result from one or many causes--loss of habitat or change in habitat, overexploitation, predation, competition, disease. An endangered species must have help or extinction will probably follow.

While still not on the national endangered or threatened species list, in 1971 the owl was included on the Oregon State Game Commission's list of Endangered Vertebrates of Oregon⁵

The object of all this attention is a nocturnal owl about 16" in length who closely resembles the common Barred

Owl of the east.⁶ The owl is very tame and has an extremely gentle nature.⁷ It is non-migratory and all available data indicate that it is extremely sedentary, with individual pairs occupying the same areas for life, being replaced by young individuals as they die. This means that any part of its range is critical habitat. It occurs at densities of about 1 pair per 2-3 square miles in good habitat (where old-growth is fairly extensive).⁸ Forsman found most of the spotted owls in undisturbed old-growth. The age of the trees varied from 220 to 600 years with uneven aged, multi-layered canopies and a high degree of crown closure. The preferred habitat also had a large number of dead and downed trees, snags and decadent trees. Most nest sites were located in cavities formed by broken tops, although some were found in cavities made by other species.⁹

While old-growth is considered from a timber management viewpoint as trees that are past the culmination of mean annual increment, from an ecological perspective old-growth is defined by the presence of certain characteristics. These include: (1) a significant amount of standing and down dead material--snags and fallen logs--on land and in streams; (2) heavy canopy closure, resulting in uneven light to the forest floor; (3) diverse and complex vegetation structure, with many different layers; (4) varied age classes, with the oldest trees dominating the canopy; (5)

specialized wildlife and plant populations; and (6) thick accumulations of duff and woody debris on the forest floor.¹⁰

These habitat characteristics coincide with the observed presence of spotted owls, and in May of 1972 Forsman expressed concern to BLM over the loss of old-growth habitat for the owl. As BLM's O and C lands span the length of the state, they are considered critical in maintaining a good distribution of owl habitat across the entire state, especially in areas where most of the land is in private or state ownership containing little or no old-growth.¹

On July 19 Forsman confirmed the presence of spotted owls on the site of a proposed BLM timber sale in the Medford district in southwestern Oregon, and asked the District if they had any program for the preservation of such wildlife types.⁵ He also found a nest site on the watershed of the city of Corvallis, jointly owned by the Forest Service and the city and one of the largest patches of old-growth on the Coast Range. The city had put approximately 100 acres of the watershed up for a timber sale. The parcel was worth several million dollars and was adjacent to the spotted owl nest site. Forsman went to the City Council to notify them of the nest site and of the fact that if the timber was cut, the nest site would be eliminated, as the owl needs a core of old-growth for

protection. The Council went ahead and cut, but agreed to begin planning to protect existing pairs and to allow cutting in the future near nest sites only if the timber had already been sold. In addition they would leave a protective buffer of 5 or 6 acres of old-growth around the sites when thinning, and a strip of old-growth within 200 acres of the nest when cutting.¹¹

Interest Groups and Their Communications

So the issue began with one wildlife biologist's expressed concern and within the year all agencies concerned with wildlife and timber in the state were involved. In particular, state and federal wildlife agencies notified the timber-producing agencies of their concern for the owl.

On July 31, 1972 the leader of the Oregon Cooperative Wildlife Research Unit outlined the spotted owl situation to the Chief of the Division of Wildlife Research of the Bureau of Sport Fisheries and Wildlife, which then resulted in a letter on August 18 from the Director of the Bureau to the Director of BLM and the Chief of the Forest Service. He described the possible listing of the spotted owl as "rare" and described a new listing category, "threatened with endangerment," in pending state legislation that might apply to the spotted owl. On August 30 the BLM Director sent a memorandum to the State Directors, suggesting that they follow up on the habitat requirements of the owl by

contacting Forsman, the leader of the Cooperative Wildlife Research Unit and the Chief of the Division of Wildlife Research.

By February of 1973 BLM had issued a manual for guidance which included a "Wildlife Program Activity Statement" in which assumptions were that there would be increasing public interest in non-game wildlife species and that particular concern for species threatened with extinction would cause a change in management efforts. A long-term objective was to maintain a maximum diversity of wildlife species in sufficient numbers to meet public demands. The need for habitat management was emphasized. Specific principles included cooperation with other concerned agencies, public interest groups and individuals; and concern for all wildlife and their habitat requirements.

In March 1973 the spotted owl was designated as a "Threatened Bird of the United States"--listed in the Bureau of Sport Fisheries and Wildlife "Red Book." This is used as a guide in compiling the "Endangered Species" official list.

In May 1973 the Director of the Oregon Game Commission proposed that a professional task force be formed to determine the habitat requirements of the spotted owl.⁵ This resulted in an "Oregon Interagency Endangered Species Task Force," an informal group whose responsibility was to coordinate work on both state and federal threatened and

endangered species. As the states have the statutory authority to manage wildlife, while the federal government is charged with the management of wildlife habitat, coordination is very much needed. The Forest Service, BLM, The Oregon Department of Fish and Wildlife, the U.S. Fish and Wildlife Service, and Oregon State were included on the committee. "Its purpose is to prevent, if possible, any fish or wildlife species which inhabits federally-managed land in the State of Oregon from being depleted to the level that would cause it to be placed on national threatened or endangered species lists."¹² Such a designation would place severe constraints on management options.

While the spotted owl had served to focus attention on protection of both wildlife and its habitat, protection of the old-growth ecosystem was the main emphasis of the Task Force. The following resolutions explain the committee's goals.

Recognizing the unique characteristics of old growth forests and their rapid disappearance from Oregon, and the importance of these communities to a variety of wildlife species, the Oregon Endangered Species Task Force proposes to study the merits of reserving or managing representative stands for the benefit of these species. It is anticipated that such studies will promote guidelines for spotted owl management as well as for associated species dependent on similar habitat. (1973)

...we should attempt to preserve the old-growth ecosystem throughout the state with areas representing different habitat types, elevations and sites...we should also pursue a research

project to inventory climax vegetation of all types for the entire state to head off conflicts that are sure to come. (1974)¹

On June 29, 1973 the Task Force recommended that statewide guidelines concerning management for threatened and endangered species be adopted by June 30, 1974. It also recommended interim protection of 300 acres around each known spotted owl location.

Both the Forest Service and BLM rejected this recommendation. BLM gave the following reasons:

- 1) Rigidly-cast prescriptions tend to become the accepted practice, even though they are intended to be of temporary nature only;
- 2) It appears reasonable to assume that the present old-growth (200 plus years) stands located within acceptable elevation limits, contain spotted owl populations, even though specific sightings of the birds or nests have not been made;
- 3) We are confident that further analysis will verify that sufficient old-growth timber stands exist to provide interim, one-year State-wide protection of habitat without the 300-acre restriction around all the known spotted owl nesting and observation sites;
- 4) Determination of the desired State-wide production level of these birds should be resolved before total protection of all sighting areas in prescribed-size

blocks is undertaken; and

- 5) The "management by individual animal location" philosophy, when applied to all species which may be identified as requiring old-growth stand habitat, presents a land management spectre of considerable magnitude.⁵

Law and Resource Management

In December 1973 the federal Endangered Species Act was passed. Although this affected only species on the federal list, it set the stage for further legislation. On October 18, 1974 the Sikes Act, PL 93-452 was passed. This law "provides for protection for fish and wildlife officially classified as threatened or endangered pursuant to Section 4 of the Endangered Species Act of 1973 or considered to be threatened, rare or endangered by the State agency." On January 10, 1975 the spotted owl was placed on the official state list of the Oregon Wildlife Committee as a threatened species. The provisions of the Sikes Act now applied to the owl.⁵

BLM meanwhile in March 1975 in their Final Environmental Statement for Timber Management stated that their timber management plans called for the harvest of old-growth timber on available lands over the next twenty years. In October 1975 their Wildlife Management Manual stated, however, that it was Bureau policy to "Administer the public

lands on a multiple use basis for the benefit of all wildlife with particular emphasis on the protection and restoration of the habitat of rare and endangered species." Passage of the Federal Land Policy and Management Act of 1976 also gave the agency a mandate for multiple use, and in November 1976 the Bureau issued a manual, "Threatened and Endangered Wildlife", wherein protection of habitat for wildlife classified as threatened or endangered by either state or federal designation was provided for.

Other 1976 legislation, the National Forest Management Act, affected the management policies of the Forest Service. The NFMA specified that plans should "provide for the diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives and preserve the diversity of tree species similar to that existing in the region controlled by the plan." (16 USC subsection 1604 (g) (3) (b))¹ This would include old-growth preservation. However, the Forest Service had been conducting research on old-growth for several years, and in its 1975 Impact Statement for the Wallowa-Whitman National Forest in northeast Oregon for the first time set aside a specific part of the forest for old-growth management, amounting to four percent of the commercial forest land. The first EIS on a forest west of the Cascade Crest to contain such an

allocation, however, was not until 1977. These western Oregon allocations have averaged less than five percent of the total forest area.¹ It should be noted that the value of old-growth timber in this region can average approximately \$4,000 per acre so that the removal of relatively few acres from harvesting can be a substantial loss to the timber industry.¹

Because of increased public interest in old-growth and mandates included in the NFMA of 1976, the Forest Service regional office issued two memos to western Oregon National Forest supervisors in 1977:

Our direction is the maintenance of diversity in timber stands...this will mean seeing that some of the oldest age class in each area is preserved, at least until final planning determines the appropriate management decision.

We all are aware of the desirability of diversified vegetation in our overall management of National Forests...Plant diversity, without question, includes extended rotation "old-growth" components. The direction to be resolved is not "if," but "how much" and "where."¹

During these years the Task Force had continued to meet and discuss the spotted owl situation. In June 1976 Forsman's study was submitted for an M.S. degree at Oregon State and this information was incorporated in analyzing management needs for protection of spotted owl habitat. In December 1976 the Task Force recommended Spotted Owl Interim Guidelines and a long range goal which was: "To maintain 400 pairs of spotted owls on the public lands in Oregon

consistent with the specific habitat requirements of the species." The guidelines were:

- 1) That for a one-year period (1977) the involved agencies protect spotted owl sightings and nest sites consistent with the specific habitat requirements as described by Forsman, 1976, and other observers.
- 2) During the one-year period, the Task Force will develop objectives and management prescriptions to meet the goal of maintaining 400 pairs of owls. The Task Force will also identify the number of spotted owl habitats and their distribution needed to maintain a viable population throughout their distribution in Oregon.⁵

Both the FS and BLM agreed to the recommendations with the understanding that a statewide management plan for spotted owls would be provided by the Task Force by January 1978. In addition, they both adopted the owl as an indicator species for old-growth and continued to conduct owl inventories on their lands.¹

An indicator species is one whose population fluctuations caused by management activities will reflect changes occurring in other species in the same biological community, so that all species do not have to be monitored. It is the same principle as the canary used to detect

hazardous levels of gas in a coal mine. An indicator species--either plant or animal--is chosen because it is most sensitive to management activity in a certain type of habitat. It is necessary, then, to understand the lifecycles of the species and to be able to detect population fluctuations. The inventories which the FS and BLM conducted were necessary to identify the existing owl population in the region. By February 1979 585 pairs of spotted owls had been located in old-growth forests in Oregon with 10 pairs found in predominantly second growth.*

By November 3, 1977 the Spotted Owl Management Plan had been reviewed by the Task Force and sent to the two agencies. The Plan provides for a minimum of 1,200 contiguous acres per pair as its home range. Of this, at least 300 must be maintained as old growth--at least 200 years old, averaging 8-10 overstory trees per acre with a developed understory greater than 30 years of age. If 300 acres does not exist, all remaining old-growth must be left and enough of the oldest contiguous forests added to form the 300-acre core. Each Spotted Owl Management Area (SOMA) should encompass the home ranges of a minimum of 3 pairs, with 6 pairs considered ideal. Single pair enclaves are acceptable where only remnant habitat exists. Core areas for each pair should be 1 mile apart and areas of 3 or more pairs should be 8-12 miles apart while single bird

management areas should be 5-8 miles apart. It can be seen that extensive acreages are involved. The goal is to support 400 breeding pairs in Oregon: 90 pairs on BLM lands, 290 pairs on Forest Service lands and 20 pairs on state, county and private lands. In addition, spotted owl sites not selected as SOMAs should be protected by a 5-acre buffer around known or suspected nest sites.¹³

The plan was to be coordinated as well with Washington, California and British Columbia and was to be reviewed annually. Gould in California has conducted research on the status of the spotted owl in that state, with results coinciding with Forsman regarding preferred habitat,¹⁴ and the Washington Department of Game has listed the spotted owl as a potentially threatened species. Washington has already begun to inventory its lands and has set up a Washington Spotted Owl Work Group, initially including representatives of the Forest Service, Park Service, and the Washington Department of Game. Representatives from private timber companies and Indian tribes were also included.¹⁵

Value System

Both agencies in Oregon agreed to implement the plan in January 1978, but discussion on the owl has not ended.¹⁶ The Department of Forestry of the State of Oregon has not agreed to participate in the management plan, claiming that there are enough other lands to provide habitat protection for the

owl and that their mandate does not include managing for wildlife.¹ A group called the Umpqua Wilderness Defenders appealed the Environmental Impact Statement on that forest's land management plan. In turn Douglas Timber Operators, Inc. reviewed the plan. This review--which questions the theories concerning spotted owl management and the need for such management--was sent to Eric Forsman by the Wilderness Defenders. Forsman, while stating that he did not want to get involved in a conflict between groups, nevertheless believed that the review had used data inaccurately and quotations out of context, and felt that it was important that the Forest Service realize these inaccuracies, so he itemized them in a long letter to the Chief of the Forest Service in February 1979.*

Meanwhile the timber industry, represented by the National Forest Products Association, hired a zoologist at North Dakota State University to conduct a study of the spotted owl in northwest Washington. His findings coincided with Forsman's in Oregon. He found the spotted owl widely distributed in the mountains of northwestern Washington and preferring old-growth habitat. His recommendations, based on those of Forsman in Oregon⁹ and Gould¹⁴ in California were as follows:

- 1) Spotted owl occurrence in proposed harvest units should be determined before units are marked and

sold. If owls are found, nest and roost sites should be located and protected if possible.

- 2) If harvesting is conducted in stands occupied by spotted owls, large groves of old-growth should be left around nest and roost areas and around small springs and streams near the nest.
- 3) If concentrations of spotted owls are identified, those areas should be considered for designation as special use areas, such as wildlife, research, or recreation areas.
- 4) The Oregon Endangered Species Task Force Group has established a policy to maintain 400 pairs of spotted owls in Oregon. Similar action should be considered in Washington.

In addition he concluded that although a spotted owl population decline would occur if management projections for National Forests are met, the owl would probably not be extirpated in Washington because of old-growth forests protected in National Parks and Wilderness areas.

The NPPA preface to this report stated that the reader should note that it only defined preferences and not requirements. It recommended additional studies to determine how managed forests could satisfy the requirements of the spotted owl, if not its preferences.¹⁷

To study this argument of whether owls can exist in

second growth, in 1976 Forsman conducted another survey and found about 1/12 the numbers of owls in second growth as compared to old growth. He concluded that it was marginal habitat at best.¹⁸

Another group, the Cascade Holistic Economic Consultants also argued that the plan was inadequate but for very different reasons than those put forward by the timber industry. Their analysis of the plan stated that spotted owls are disappearing from Oregon at a rate of 0.8 percent per year, yet the management practices advocated in the plan would further diminish the population; in particular, the amount of old-growth to be preserved might not be sufficient to support the population. The group felt that the plan was based on agencies' needs to minimize conflicts with timber management policies, and served as a substitute for a comprehensive old-growth plan. This was their basic argument--that the plan should be concerned with the preservation of old-growth, to benefit all flora and fauna dependent upon such habitat. It recommended:

- 1) a public review of the overall plan, and
- 2) an ecosystem management concept rather than species-specific management.¹

This is where the issue stands in October 1979.

Summary

This case is unusual in that it was initiated by one

concerned wildlife biologist. In addition, it is a case almost solely revolving around various state and federal agencies that took action in an attempt to prevent conflict from outside sources rather than resolve one. The existing conflict is within the mandate of the multiple-use land-managing agencies. It is a particularly difficult one, given the extensive acreage requirements of one rare wildlife species and the heavy economic consequences that must be borne by the timber industry if preservation is established as a management practice. While ostensibly a conflict regarding the owl, the conflict is primarily concerned with the preservation of a unique forest ecosystem--old-growth Douglas-fir, a very valuable timber resource.

Analysis of the Variables

The weighting of the variables is also unusual.

The primary variables are (1) economic system, (2) land tenure, (3) law, (4) resource management, (5) environmental factors, and (6) interest groups.

The only secondary variable is value system, and transportation is a negligible variable.

The economic system is the source of conflict, because of the tremendous value of old-growth Douglas-fir in the Pacific Northwest and the overwhelming dependence of the economy of the region on this natural resource.

Since there is this dependence, the next primary variable is land tenure. Or who owns the resource. In this case the majority of the remaining old-growth in the state is owned by two government land-managing agencies. This is a very important variable as the fact that these are public lands makes two other variables primary ones, simply because federal lands are regulated by law so that resource management options are limited.

Law and resource management thus go hand-in-hand in importance. Both BLM and the Forest Service are required by law to give equal consideration to all the services of the forest, so that wildlife is to be considered on an equal basis with timber. Or non-market forest commodities are as important under the law as market goods. While the Multiple Use-Sustained Yield Act of 1960 gave the Forest Service this mandate, BLM did not have a specific mandate for multiple use until its Organic ACT--the FLPMA of 1976--was passed. In that same year the NFMA also gave specific direction to the Forest Service, so that both agencies' management policies were altered. Such specifics in the legislation as the preservation of wildlife habitat made clear the fact that multiple use could not be ignored. As a result, the resource management goals and practices of the agencies had to adapt to the preservation of a rare species of wildlife.

Environmental factors is thus a primary

variable--determining the requirements of this particular species. It is also important as the criterion for identifying a unique ecosystem and its inhabitants.

Interest groups and their communications is the most important primary variable as it determined the way the issue developed and was handled. The fact that the interest groups were all government agencies--or government agency employees, as Eric Forsman, made the case unique and illustrated the various power structures and the fact that compromises can be reached and decisions made between state and federal agencies without pressure from outside sources. The threat of the owl being designated an "Endangered Species", however, may have had something to do with this cooperation.

Value system is a secondary variable, appearing only in group criticisms of the Spotted Owl Management Plan. This opposition may grow and increase the weighting of the variable in the future. The initiation of the plan itself is not a result of the value system of any group, but rather of professional judgments and legislative requirements.

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ST. CHARLES

This case involves the forest services of mining and environmental influences. In particular, the issue concerns flooding that may be caused by a combination of surface mining and deforestation on steep slopes. The place is Central Appalachia--the town of St. Charles in Lee County, Virginia. The time is the present and the protagonists are the citizens of St. Charles, social organizations, and federal and state agencies concerned with mined land reclamation, water resources, and social services.

The Region

This specific local issue must be considered within the context of the overall regional and national issue: the conflict between energy needs and environmental quality. It may be summed up in the following statement:

...a striking anomaly of Appalachia: while holding the Eastern United States' monopoly on the energy source for electricity production, coal, this region nevertheless rates far below the rest of the nation in every economic measure relevant to human welfare. Moreover, in order to satisfy the nation's needs for energy, Appalachia is subjected to an accelerating physical destruction of its originally very attractive environment.¹

Extreme southwestern Virginia is a region relatively isolated from the rest of the state. Jutting out in the shape of a wedge, it is bounded on three sides by other states--Kentucky to the west and north and Tennessee to the

south. This is coal country--a part of Appalachia with all the connotations implied by that word. Its natural resources are its forests above the ground and its minerals below.

The forests were cut initially for mine timbers when coal mining began in the area in the early 1900's. This was deep, or underground, mining and began the cycle of boom and bust in the region that is characteristic of the coal industry. The forests are still being cut, but surface mining, commonly known as strip mining, is also being used to extract the coal.²

Stripping for coal consists of peeling away the layers of earth with heavy equipment to reach the then exposed seam of coal. On mountain slopes this results in a flat "bench" where the coal is extracted, a "highwall" which is just that--a perpendicular surface along the side of the mountain where it has been sliced away, and "overburden" or "spoil" which is the removed top and subsoil pushed over the edge of the bench to rest--hopefully--on the downside slope. If the angle of the slope is greater than the angle of repose of the exposed material, the spoil will slide to the bottom of the slope where streams commonly are found. This sediment load can pollute the waters, block the streamflow, or cause damage to houses or crops located on the creek bottoms.

Although surface mining is less capital and labor intensive than deep mining and this was one reason for

conversion from deep to surface mining initially in the '40s and '50s, the passage of the Mine Safety Act in 1969 also was a factor. The safety and health regulations applicable to deep mining that this legislation mandated were costs that many mining companies either could not or would not absorb and this encouraged the expansion of surface mining. The recently passed Federal Surface Mining and Reclamation Act (P.L. 95-87, 1977) may reverse this trend and encourage more deep mining.²

In any case, surface mining has a limited future. The U.S. Geological Service and the Bureau of Mines estimate that 90 percent of the coal reserves in the U.S. will have to be deep mined. In Appalachia the ratio of deep mineable reserves to strippable reserves is 19 to 1.³ Meanwhile, there are already 1.8 million acres of land in the Appalachian states disturbed by strip mining, with the annual rate of disturbance increasing rapidly.⁴

The Community

Lee County is the most westerly county in the state. It borders Harlan County, Kentucky, which is well-known for its mining disputes, and mining is and has been the mainstay of the Lee County economy as well. The Southwest Virginia 208 Plan states that this region has been traditionally thought of as "hard core" Appalachia and "The mountains, coal mines, isolation and human needs of the people in

Southwest Virginia have been examined in detail in the context of national interest."² These factors--geologic, economic, geographic and social--explain the issue which centers on St. Charles, a small community in the northeastern part of the county, just three miles over Little Black Mountain from the Kentucky line.

The geology of the county is such that it "hinders development, reduces travel and constricts surface waters to the narrow valleys created by the steep slopes."² The St. Charles area is located in the Cumberland Plateau physiographic province. This is a region of very steep mountains with narrow V-shaped valleys dissected by swift streams. These physical constraints have limited development to the valley bottoms. In addition, the region is underlain by rich bituminous coal deposits of very high quality, and as a result the steep slopes above the narrow valleys with their fast-moving streams have been heavily mined. The combination has caused severe flooding problems for St. Charles for many years.⁵

St. Charles is a small town of 350 people with 1500 more scattered about the surrounding community. The town is located along the banks of Straight Creek, Bailey's Trace and their tributaries. Almost all development is confined to these narrow valleys with elevations ranging from 1,520 feet to 3,620 feet. The areas along the banks of Straight

Creek, the main stream, are prone to periodic flooding, which means that St. Charles is systematically inundated. The creeks drain the steep mountains to the north and west of the developed areas and all along the crests of these mountains and along the creeks as well are extensive areas of barren surface-mined lands.

This southwestern Virginia region is one of the wettest in the country, averaging 45-50 inches of rainfall annually. Flooding occurs on most streams every year and in small drainage basins locally intense thunderstorms cause floods through the year.

All of the region was initially heavily forested. Lumbering began in the late 1800s and the seasonal floods were used to float logs to market. By the early 1900s almost all the merchantable trees had been cut so that present stands are second-growth Appalachian hardwoods. Although logging still takes place, it is on a greatly reduced scale.

In the early 1900s however, coal and iron ore were found in the region. This brought in the railroads and the region opened up for development. This took the form of a one-industry economy by the end of World War I, as most of the timber had been harvested and the mining of iron ore in the area was not profitable after the Lake Superior deposits were discovered. As a result, the cycles of the coal

industry in turn generated the population cycles of the region. Lee County had a population high of 39,296 in 1940, when demand for coal was peaking. By 1970 it had dropped to 20,321--an outmigration of nearly 19,000 persons. When the bottom fell out of the coal market in the '50s and '60s the area had no other resources to fall back on. St. Charles in effect was a coal camp and when the mines closed the town gradually deteriorated. Company coal camps upstream were abandoned, but St. Charles survived because it was an incorporated town. Those who remained, however, merely subsisted. As an indication of the flux of job opportunities in the coal industry, in 1950 there were 2,309 mining jobs in the county. In 1970 there were 238. By 1976, however, mining jobs were up to 642,⁵ and it is expected that in the future there will be even more job opportunities in the county because of our increased national emphasis on coal production, as well as additional conversion to labor intensive deep mining from surface mining.² In fact, the county grew 27 percent from 1970 to 1977 because of additional demand for coal--the first time in three decades that outmigration was reversed.

The economic status of the county, however, is still low. Per capita income was \$3,552 in 1975 as compared to \$5,786 for the rest of Virginia. This was an improvement from 1970--when it was one-half that of the rest of the

state. The increase was due to increased coal production. Unemployment is a problem as well, again the result of the dependence of the total economy on one industry, particularly when that industry is prone to strikes and layoffs. The county jobless figure for 1978 was 11.2 percent. While Lee County is dependent upon one industry, it does have some agricultural base. The St. Charles area has none. A land-use map of the area shows no uses other than surface mines, forests, and urban or built-up lands.⁵ Forests presently cover most of the lands in the St. Charles watershed, with 16,060 of the total of 17,692 acres forested, 1,244 acres surface coal mines and 7,367 acres underground coal mines.² As a result of this dependency, the economic status of the town is even less than that of the rest of the county. In 1974 its per capita income was \$1,884 compared to \$4,046 for Pennington Gap--a town only 5 miles away.

We thus have a picture of a poor county and an even poorer town heavily dependent upon one industry for its economic livelihood. In 1976 mining accounted for 81 percent of all jobs for firms based in St. Charles.

The Lenowisco Planning Commission, which is the state regional planning agency responsible for Lee County, projects that coal production in the St. Charles area will continue to rise, with more employment opportunities

becoming available. The Commission qualifies that statement, however, saying: "It should be pointed out that future coal miners may not elect to reside in the St. Charles area even though their jobs will be there. Because of the limited amount of developable land, flooding problems, inadequate utilities, poor services, and generally deplorable living conditions, these productive workers may well choose to live elsewhere in Lee County."⁵

The town has serious problems. While there are public water and sewer systems, the Planning Commission states that most of the residents consider hooking up to the sewage system a "compromise of their freedom" and dump their wastewater and sewage into the nearest streams. Combined with pollution from the mines, this means that there is a severe water quality problem in the area. Transportation is poor with a single lane through the business district and heavy coal truck traffic. In addition, a housing survey revealed that 64 percent of all units were substandard.⁵

This is the place. A small town with poor living conditions, situated on a flood plain in a narrow valley surrounded by steep slopes from which the forest cover has been removed, and located in a region where there are consistently heavy rains. All the ingredients for perpetual tragedy. This is exactly what has happened.

The Flood

A major flood struck southwestern Virginia and neighboring regions of Kentucky and West Virginia on April 3, 4 and 5, 1977. It was the worst flood in memory for the Central Appalachian region, causing the deaths of 19 people⁶ and property damage estimated as high as \$175 million.⁷ The Virginia National Guard was called out, but trying to reach "hard hit St. Charles" they found the roads impassible and rescue teams were trapped inside the town.⁸ Thirteen Virginia counties were declared federal disaster areas and the magnitude of destruction was such that both state and federal agencies were forced to address the flooding problems in the region. In particular, attention was focused upon the effects of strip mining on flooding. The Washington Post wrote:

Large portions of Appalachia have been turned into water and mud wastelands as a result of April 8-inch rains abetted by the scars of strip mining. New records for flooding and destruction were set. Citizens saw the rains rage from the mountaintops in oceanlike waves and blamed the quick runoff directly on the strip mining that has denuded watersheds of their soil and trees. The Secretary of the Kentucky Department of Natural Resources said: "Areas that have strip mining as a general rule are like a parking lot...It's natural that water will run off asphalt faster than sod." All agreed that at the least the mining's balding of the hills and silting of streams worsened the flood.⁹

Within a month, six Appalachian area citizens' groups and the Environmental Policy Center in Washington, D.C.

called on President Carter to investigate. They strongly felt that throughout the region strip mining had caused extensive damage. In particular, they blamed the mines near their homes for the mud damage they suffered.⁶ Not only citizens stated this belief. Governor Rockefeller of West Virginia said at a news conference: "It (strip mining) contributed to the disaster substantially."¹⁰

The extent of the flood damage generated anti-stripmining sentiment even among people who had formerly accepted it as a necessary part of the region's economy. It now had become a threat to that economy. A restaurant owner in Williamson, West Virginia, whose business was destroyed said, "It shouldn't have taken a devastating tragedy to focus attention on the horrors of strip mining...But since it has, we now have an invaluable opportunity to go beyond mere protests. Why can't we stop the abuses? If stripping continues, flooding continues." Residents were frustrated because the industry denied that stripping had anything to do with the flood, while Washington's position was that the nation needed coal as an energy source and it was not the time to abolish strip mining.¹⁰

Social Action

As with all other areas of the country, times are changing in Appalachia where exploitation has been accepted for over half a century. While the politics of the region

and the states containing the region have been traditionally either dominated by or receptive to coal interests, more and more people are banding together in an effort to change conditions. A Citizens Action Group in Charleston, West Virginia calculated that flooding was 20 percent higher than it would have been if the watershed had not been stripped. In addition they estimated this to be a conservative figure as their calculations had been based on watersheds whose slopes were less steep than those in the Charleston watershed.¹¹ Ten citizens' groups in Central Appalachia urged a government investigation of the April floods. All credited strip mining as the major cause of flooding, but they also included other factors: clearcutting, Corps of Engineers construction projects along waterways, highway construction, and pipeline construction for oil and gas on steep slopes. In short, the deforestation of the steep slopes of the region.¹²

The heat was on. U.S. Representative Leo Ryan, Chairman of the House Government Operations Subcommittee, conducted a preliminary hearing and found enough evidence of a cause-effect relationship between strip mining and the April floods to conduct a full-scale investigation. His office stated that most evidence indicated that there is a link between strip mining and water runoff and soil movement, with a more conclusive link to sedimentation and

erosion into streams.¹³

On July 26, 1977 the Congressional subcommittee on the Environment, Energy and Natural Resources held their first hearing on the subject of strip mining as a source of flooding. It is axiomatic that heavy sediment loads in streams reduce their streamflow capabilities. There was also testimony to the effect that peakflow rates increased by a factor of 5 after stripping had occurred in a watershed. The witness was a mining engineer employed by the West Virginia Department of Natural Resources, responsible for reviewing all drainage control plans for strip mines in West Virginia. Representing the Appalachian Coalition, he recommended that "serious consideration be given to the gradual phase-out of strip mining as a means of recovering coal in the country...Strip mining is inherently a destructive and undesirable method of recovery and should not be permitted unless a dire emergency situation exists".¹⁴

All of this focused attention on the strip mining act that had been before Congress since 1972 in one form or another and had been vetoed in 1975 by President Ford, who said that it might impede coal production.¹⁵ On August 3, 1977 the Federal Surface Mining Control and Reclamation Act was passed. Among the many constraints placed upon surface mining, the following would most affect mining on the steep

slopes of southwest Virginia:

- 1) land affected by mining must be restored to a condition capable of supporting the uses which it could support prior to mining;
- 2) topsoil must be preserved and restored;
- 3) surface mining cannot be conducted within 500 feet of active or abandoned underground mines unless it does not present a hazard to miners or improve environmental conditons;
- 4) roads must not affect water flow;
- 5) a permanent vegetative cover must be established; and most importantly,
- 6) the land must be restored to its original contours and
- 7) on steep slopes (above 20 degrees) no spoil may be placed downslope below the bench.¹⁶

As might be expected, opposition to the law in southwest Virginia was intense, as slopes mined there are commonly greater than 20 degrees. Those around St. Charles being mined are 35 degrees or more.¹⁷

Meanwhile, however, flooding continued in the region and debate continued over its causes. The state of Kentucky listed the major causes of the 1977 flood's severity as strip mining, rainfall, and floodplain construction. It found that in particular, (1) small tributaries had

"significantly higher flood stages" because of surface mining; (2) that flood levels rose tremendously because of sediment deposits below individual stripping operations, and (3) that runoff and erosion from stripped areas is worse than from undisturbed land.¹⁸ The value of forests in alleviating flood damage by reducing erosion, peak flows, and stream sedimentation has been documented by many researchers.^{4,19,20} As one researcher summarized:

I believe it is evident by now that undisturbed forest soil promises a minimum of erosion, but that surface erosion, mass movement, or channel cutting may be expected whenever mineral soil is exposed. Surface mining results in a drastic disturbance of the land, with a great potential for erosion and sedimentation...In 1971, I reported early results of a study in eastern Kentucky which showed suspended sediment concentrations as high as 46,400 ppm from a watershed undergoing active mining while an unmined forested watershed yielded 150 ppm.⁴

Corrective Efforts

But while the debate over causes continued, the people living in the region were trying to recover from the April 1977 flood. There were many complaints about the federal agencies responsible for relief efforts--the Federal Disaster Assistance Administration (FDAA) and the Department of Housing and Urban Development (HUD). Citizens stated that if they'd lived in another country they'd get help quicker. As it was, one group in Williamson, West Virginia considered filing a class action suit against both agencies.²¹

Citizens also continued to protest the lack of action on the part of social agencies in the region and formed private groups in an effort to give help to citizens and put pressure on the agencies. West Virginia citizens formed a Flood Consortium and challenged the Appalachian Regional Commission's response in particular.²² In Virginia the Southwest Virginia Housing Coalition was organized, a non-profit group working under the auspices of CETA (the Community Emergency Training Act) to promote and produce housing for low income people.²³

Continued flooding had caused enough concern in St. Charles that a group of citizens formed a chapter of the Virginia Citizens for Better Reclamation (VCBR) a Wise County organization that had been organized in 1976 to fight strip mining abuses. The St. Charles group was called "Save Our Community".²⁴ Over 100 persons attended the first meeting to discuss options for relief for the town. Complaints were directed at the government as well as at strip mining. A veteran of 37 years of experience in both deep and strip mines said that he "had never seen water rise so fast as it does now on watersheds that have been stripmined. We've never been flooded in these places before strip mining came in. Now our creeks are so full of rocks and mud from the mine sites that any amount of rain floods our streams." The group also criticized all levels of

government--from their Lee County Board of Supervisors to their Congressman. They planned to contact the Tennessee Valley Authority (TVA) for help but reports were that the agency could not help them because a large flood construction project could not be justified for a town with such a small population and limited business.²⁵

Agency Action

Meanwhile, St. Charles had gradually become a focal point of national concern--possibly because its plight was so obvious. A Washington Post story in December 1977 depicted graphically the situation of the residents. St. Charles had had four major floods that year, including the April disaster, but citizens said that the October floods were the worst, carrying refrigerators and trees down Main Street. The social as well as the economic costs were tremendous. The article quoted the daughter and wife of a miner as saying: "You live in a horror and a dread...They holler that we're a depressed area and our land ain't worth nothing, but it's all we got." The mayor added, "Most of us accept the fact that nobody's going to help us...It used to make us angry but not anymore. It's just the way it's always been here."²⁶

This did not prove to be true. Although the town did not qualify for federal aid after the \$1.4 million October 1977 flood damage, it received financial assistance from the

county and TVA. In addition a multi-agency rechannelization project was proposed to clean out the debris from the streams and at least temporarily relieve the situation. This project would be administered as a flood control program under TVA, the Corps of Engineers, the Virginia State Water Control Board, and other agencies.²⁷ More flooding in November hit a six-county area and the town finally officially became a federal disaster area. This brought a deluge of representatives from local, state and federal agencies--including the Internal Revenue Service. There was, by some accounts, substantial confusion. A resident explained part of the problem: "You got to understand us here...A lot of the people in the hollers up yonder, they can't neither read nor write. Some man comes shuffling a lot of papers at 'em, they're gonna take off in the other direction." Some were too independent to ask for help as well.

But the problem was more than a temporary local one. As a TVA official said: "St. Charles would suffer flooding if there had never been a strip mine. They're sitting at the bottom of a funnel." The steep slopes and merging creeks make flood prevention unrealistic, but "the endless supply of material from the strip mines" makes the situation worse.²⁶ After the October floods the mayor said that "Ninety-five percent of the people blame it on strip

mining, and the other 5 percent are strip miners."²⁸

Although the federal government would not begin enforcing the strip mining law until May 1978, in December 1977 an Interior Department official with the new Office of Strip Mining and Reclamation Enforcement made an unannounced spot tour of the St. Charles watershed with other agency representatives. He declared it "the obvious victim of some terrible, terrible mining violations which have rendered the watershed an unbelievable mess...It can't be emphasized too much what bad shape the watershed and streams at St. Charles are in. There's no doubt at all that much of this was directly caused by a long history of complete abuses of strip mining and the almost nonexistent reclamation we frequently found at old sites."

The Executive Director of the Virginia Surface Mining and Reclamation Association responded: "It is disgraceful for public statements such as this to be made on the subject without any more background and study of the situation than (he) had. This is typical of the environmental extremism which is being exhibited by the federal government in the enforcement of this law and this is exactly why the (strip mine) industry opposed it in the first place."²⁹

"Save Our Community", encouraged by agency interest in the area, continued to lobby for political support. They decided to invite their Congressman and State Delegates to a

meeting "any night but Saturday. It usually rains on Saturday."³⁰ The group held meetings with these representatives and continued to press their state legislators for immediate state implementation of the federal strip mining law, rather than waiting for the federal government to step in. They pointed out that Virginia is the only Appalachian state that allows overburden to be pushed downslope.³¹ In March and April 1978, two days of public hearings were held in St. Charles to document citizens' testimony on the causes of flooding throughout Central Appalachia--both the April 1977 flood and those that had occurred in many localities since that time.³²

The end result of all the publicity and lobbying was that on May 17, 1978, the Secretary of the Interior announced the selection of St. Charles as one of seven projects to be implemented under the new strip mining law. The act provided for federally funded relief under the Office of Surface Mining's Abandoned Lands Program. Upon enactment of the law, the Department of the Interior began selecting "emergency" situations in the coalfields "where public safety was in jeopardy as a result of present or past mining activity." Both the Virginia Division of Mined Land Reclamation and the Tennessee Valley Authority had urged the DOI's Office of Surface Mining Reclamation and Enforcement

(OSM) to select St. Charles as one of 13 national "emergency" demonstrations.

The St. Charles Project was to eventually total \$5 million, including approximately \$650,000 as a first-phase allotment for removing stream sedimentation and abandoned mine waste piles.³³

The agency described the St. Charles project as follows:

This community of about 1200 people is subject to frequent flooding from Straight Creek and smaller tributaries clogged by sedimentation from old gob piles and the casting of spoil on downslopes during surface mining operations. County roads, railroad spur lines, and residences are damaged often (e.g., April, October, November 1977) by floods that can result from as little as one or two inches of rainfall. The initial funding will be for reducing the immediate flood threat within the community and for planning a longer range program for the watershed which has been severely abused by past surface and underground coal mining. The long-range plans for the watershed may involve several State and Federal agencies and are intended to form the basis of a pilot project for the treatment of numerous small watersheds with similar problems in Southern Appalachia. The Tennessee Valley Authority and Virginia's Department of Conservation and Economic Development have been meeting with area residents to discuss required work.

The project would be funded by the Abandoned Mine Reclamation Fund (established by the 1977 Act) from severance taxes of 35 cents per ton of surface-mined coal and 15 cents per ton for deep-mined coal. By January 30, 1978, the fund totaled nearly \$34 million.

The purpose of the program is to rectify adverse

effects of past mining operations and to alleviate dangers to public health and safety through federal and state reclamation programs. The projects were chosen because of their high priorities in meeting the requirements of the use of the funds for: "the protection of health, safety, general welfare and property from extreme danger or adverse effects of coal mining practices."

An emergency orphaned land reclamation proposal for the St. Charles watershed was prepared by TVA and approved by OSM³⁴ and on September 15, 1978 the Virginia Division of Mined Land Reclamation and the Office of Surface Mining entered into a cooperative agreement to correct problems that were causing immediate danger to residents in the area. The St. Charles Immediate Action Project was funded at \$941,366 with the following objectives:

- 1) To provide immediate limited flood relief by removing sediment and debris from the affected streams (Straight Creek, Bailey's Trace, Fawn Branch, and Gin Creek.)
- 2) To reclaim three "gob piles" (refuse from past deep mine operations including slate, rock, waste coal and other debris in the watershed area).
- 3) To establish a comprehensive stream monitoring program.
- 4) To develop a comprehensive reclamation plan for the

watershed.

TVA and the Virginia Department of Conservation and Economic Development's Division of Mined Land Resources are working on a comprehensive plan for this project with the stated goals of restoring streams to productive use, improving environmental and living conditions, and completely eliminating the threat of flooding through a long-term maintenance work program. If approved by OSM it will be implemented by the DMLR.

The stream restoration part of the project necessitated obtaining permits from the Army Corps of Engineers (404 Permit), the Virginia State Water Control Board (401 Permit), and TVA (Form 26A).⁵ This took some time, so that the initial grant to reclaim Bailey's Trace and Fawn Branch was awarded in February 1979. These creeks are part of the watershed area above St. Charles and had flooded the town in the fall of 1978. The initial grant for the two creeks was \$140,000. However, citizens of St. Charles credited this initial dredging of the creek beds above the town with preventing flooding during heavy rains in the spring of 1979.³⁵

Another \$440,000 was approved for the St. Charles Project in September 1979 by the OSM. This will pay for cleaning out and restoring the banks of two additional creeks. It brings the total amount authorized so far to

over \$1.3 million.³⁶

In addition the Lenowisco Planning Commission, funded by the state and federal governments and the Appalachian Regional Commission, has completed a redevelopment plan for downtown St. Charles to relocate some homes, floodproof others, and construct new low-cost housing off the floodplains. The Commission is seeking a grant from HUD.³⁴

This redevelopment part of the project is in doubt. Originally proposed to be implemented under Title IV provisions of the strip mining act, OSM indicated that it is not likely that the entire project could be funded.⁵ Originally estimated to cost \$5 million and take 15 years, the proposal published in September 1979 estimates costs at \$9.2 million. This includes: (1) the purchase of 35 houses at \$10,000 each; (2) a relocation allowance to the 35 families of \$15,000 each; (3) development of the relocation site at \$15,000 per lot; and (4) the demolishing of 35 houses at \$1,000 each.⁵ This means that the relocation of 35 families will cost \$41,000 each or \$1,435,000.

In addition there is (1) rehabilitation and floodproofing for 345 houses at \$5,000 per house (\$1,725,000 total cost); (2) the rehabilitation of the Central Business District on the west side of the main street (10 structures at \$10,000 each); (3) demolishing the east side of the Central Business District that infringes on Straight Creek

(16 structures at \$1,500 each): (4) purchase of Central Business District (16 structures at \$15,000 each); (5) the relocation of the east side to the west side (10 businesses at \$30,000 each); and (6) improvements totaling \$260,000 to the Central Business District.⁵ This means that the relocation of the west side and improvements on the east side of town will cost \$924,000.

In addition the school will have to be rehabilitated and floodproofed at a cost of \$318,000. The floodproofing alone will cost \$200,000. Sewer and water lines will be extended to existing development at a cost of \$2,779,000 (the largest expenditure), a bridge will be replaced (\$55,000), and the area landscaped (\$25,000) to complete the construction costs of \$7,261,000.⁵

This list gives a small indication of the enormity of the problem. The Lenowisco Planning District and TVA are attempting to obtain funding from HUD, the Farmers Home Administration under their 601 Energy Impact Area Assistance Program as well as their regular programs, the Appalachian Assistance Program as well as their regular programs, the Appalachian Regional Commission and/or others.⁵ In any case, it is obvious that the costs of coal have not been adequately reflected in its price. And this is only one aspect of the social costs involved. Health costs and other environmental and social costs are not a part of this

particular issue. The Appalachian Resources Project at the University of Tennessee has documented these as considerable.^{37, 38, 39, 40, 41, 42, 43, 44} Even church organizations have participated in researching the area. The Christian Family Services conducted a local economic survey that showed that the social problems of St. Charles are as great as its environmental problems.⁴⁵

Politics

On the political side of the issue, the Town of Wise, the Virginia Surface Mining and Reclamation Association, and 63 coal companies filed suit in October 1978 against the federal government to prevent enforcement of the 1977 Strip Mining Act. (The town of Wise is in an area that is very heavily mined. It is also much more populous and affluent than the St. Charles area.) The plaintiffs argued that the act unconstitutionally deprives the coal industry of its right to mine coal because of its tough regulations; and further, that it is an improper infringement on the state's powers to regulate its own coal fields. The state of Virginia is particularly affected by the regulations of the act because one-third of Virginia's coal production (approximately 14 million tons annually) is strip mined. The USGS in 1973 found that 95 percent of the coal that can be strip mined in the state is found in mountainous regions where slopes are greater than 20 degrees. This is the

highest percentage of any state in the country. Strip mining representatives say that it is extremely costly, environmentally unwise, frequently unsafe or just impossible to restore these slopes to their original contours, as the act requires.¹⁵ The town of St. Charles entered the case as a friend of the court, their lawyer pointing out that OSM had determined that 1977 flooding in Lee County had been caused by strip mining and for that reason was funding a flood control project in St. Charles.¹⁶

On February 14, 1979, Judge Williams of the U.S. District Court in Abingdon, Virginia, issued a preliminary injunction against enforcement of the law, finding that it violated the Fifth and Tenth Amendments of the Constitution (due process and states rights). He stated that the provisions of the act made it economically impracticable to surface mine on Virginia's steep slopes.¹⁷

The government filed an appeal and the Governor of Virginia, testifying on behalf of the mining interests in the state, said that the act was an attempt "to put the surface mining business out of business in Virginia". (Virginia is the seventh largest coal producing state in the country and mining is a \$1 billion per year industry there.) The governor added: "If we allow the federal government to determine...how we are going to use our land in the mountain counties of southwestern Virginia, I feel that it's just a

foot in the door as to what they're going to be doing in the future with zoning of our forests, zoning of our cities, zoning of our counties throughout the Commonwealth."¹⁵

Industry argued that the act (1) increased mining costs sharply; (2) put some Virginia coal companies out of business and resulted in the loss of hundreds of mining jobs; and (3) had been abused by federal officials in enforcement procedures.⁴⁸ The opposing view was expressed by a St. Charles councilman and former strip miner: "As far as prejudiced against strip mining, I am not...That's the livelihood of a lot of men. But there should be strict control. Nobody ever put any money into getting (the St. Charles area) cleaned out until the federal government got into it."¹⁵

On August 10 the U.S. Circuit Court of Appeals in Richmond overturned the injunction, finding that the lower court had not adequately taken the public's interests into consideration and that the intent of the legislators should have been considered. The injunction, however, was dissolved on procedural and not constitutional grounds, so that the case itself remains to be heard, and a permanent enforcement prohibition is still being considered by Judge Williams⁴⁸

In July the National Wildlife Federation, the Council of Southern Mountains, and other conservation groups filed

suit against the Department of Interior, charging that it was not adequately enforcing the law.⁴⁹

On the other side of the question, several states, 105 coal companies, the National Coal Association and the American Mining Congress have also filed suit, claiming that the Department of Interior regulations are too tough. Environmentalists entered this suit, charging that the White House Council of Economic Advisors had intervened improperly to water down the regulations. They want greater citizen participation in the state planning process and open public meetings between the Department of the Interior and state officials.

Finally, the Senate Energy Commission passed amendments allowing the states to ignore the regulations if they follow the intent of the law.⁵⁰ The full senate then voted to let the states ignore the Interior Department rules in deciding how the standards should be applied. While acceding that the DOI regulations are exceedingly tough and so detailed as to deny leeway to the states, the Washington Post editorialized that while the Senate may have been trying to make the law work better, they were playing into the hands of those who don't want the law to work at all.⁵¹

So the issue continues. Given the nation's energy situation and the increased emphasis on coal as an energy source, the solution is not in sight. Meanwhile in

September 1979 flooding in Buchanan County, Virginia, caused two deaths and \$10 million property damage. The area had been stripped on slopes up to 45 degrees and local residents blamed the mining for the extent of the damage.⁵² The Virginia Water Resources Center reported: "Most of the damage occurred in an area where limited strip mining had been conducted."⁵³

The stakes are high in this case--life, property and economic livelihood--and so the issue is a powerful one.

Analysis of the Variables

The primary variables in this issue are: (1) environmental factors, (2) the economic system, (3) resource management, (4) taxation and law, and (5) interest groups and their communications.

Environmental factors is the basis for the issue. The deforestation of the steep slopes in the region is almost unanimously credited with causing its environmental problems. Although deforestation is the result of many land use activities, strip mining is the one that is practiced most extensively and its effects on the landscape are the most obvious.

The way in which strip mining is practiced--in addition to the question of whether it should be practiced at all in such mountainous areas--is the focal point of the issue. In particular, reclamation--and the extent of reclamation

required--is the concern of both miners and citizens. Resource management practices thus is the second primary variable.

This brings in the variable of law, which in this case is regulation of resource management practices. The Mine Safety Act of 1969, aimed at protecting the health and safety of deep miners, raised underground mining costs so that surface mining was encouraged. The Surface Mining Act of 1977 may reverse this trend if the challenges to the law are overturned by the courts and the act is upheld.

Economics is the major variable in these legislative constraints upon management practices. The costs involved in the laws' implementation can make a specific type of resource extraction economically impractical. The question is not whether coal mining will take place, but rather what kind of mining it will be. The region as a whole, however, is worried that the new law will make western coal more attractive, as its extractive costs may be less under the new law than those in the east.

The combination of economics and environmental factors has brought in the various interest groups. These are innumerable if you consider all the federal and state agencies involved in the issue. However, the important interest groups are (1) local citizens concerned with environmental problems and (2) local citizens concerned with

economics (strip mining). These two groups are the important factors in the issue, and the agencies have merely reacted to them.

These are the primary variables. Value system is the only secondary variable. The region is one of intensely independent people who resent intervention from outsiders. The surface miners in particular believe that no agency or authority has the right to tell them what to do. They believe that they have a right to use the land as they wish. Residents, with the same cultural background, have not strongly objected to this use until it has reached a point where their lives and property are being destroyed. The cultural tradition in the region has been to use the land--not preserve it.

Land tenure and transportation system are negligible variables, although both have been important in the past and have provided a basis for the issue. Transportation was instrumental in making coal a resource. It opened up the region and made mining an economic possibility. Land tenure was an important factor when the coal industry and speculators came into the region and bought the mineral rights from the residents. Neither variable, however, played an important role in this issue.

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THE MISSISSIPPI DELTA

This case concerns the conflict between the forest land services of wood and agriculture--timber versus soybeans. The service of recreation is subsumed in the service of wood; i.e. wildlife habitat. The recreation interests in the case advocate that the land at issue remains in timber production rather than being converted to agricultural use. The specific case that illustrates the issue concerns a private landholding of 20,000 acres in the Louisiana delta. The protagonists are the private landowners, the forest industry, environmental and recreation groups, and two federal agencies--the Corps of Engineers and the Environmental Protection Agency. The case is current and only partially resolved in August 1979. The community is the lower Mississippi River Delta.

The Region

The lower Mississippi Valley extends from Cairo, Illinois to the Gulf of Mexico--a distance of some 600 miles--and is the largest productive hardwood region in North America. More than 90 percent of these woodlands are in the Delta--the predominantly alluvial counties of Arkansas, Mississippi and Louisiana. The problem is that these productive timber lands are potentially productive agricultural lands. In particular, they are good soybean-

growing lands. As soybeans have become an increasingly valuable high protein crop, those lands in the Delta that are well suited to soybean production are being converted from forest to agricultural use. These changing patterns of land use in the area are a major concern of those interested in securing a continuous, adequate supply of prime hardwood timber.

The physical terrain and climatic conditions in the Delta--the combination of rich, relatively level alluvial soils and a long growing season with abundant rainfall--provide favorable conditions for highly mechanized cash crop agriculture. Land clearing and agricultural production began with the first French settlers in the area and has continued at an irregular pace over the years. By 1969, however, cropland was established as the dominant land use in the region, supplanting forests, which as late as 1950 occupied 48 percent of the land area in the Southern Mississippi Alluvial Valley but by 1969 had dropped to 31 percent.¹

Land Use

In the 1930's, when the first forest survey statistics were available, 11.8 million acres in the Delta were classified as forest lands. By 1974 4.6 million of these acres had been converted to other uses. Forest lands in the Arkansas Delta decreased by more than 50 percent with 2.2

million acres lost, while 1.7 million acres of Delta forest lands in Louisiana were converted during this time.²

Between 1957 and 1967 alone, 400,000 acres in the Mississippi Delta were cleared. As almost all forest lands in the Delta are commercial, this meant a loss of 22 percent of its Delta commercial forest lands. The remaining 1.5 million acres comprise only 27 percent of the total land area of the region.³

A study in 1969 showed that Louisiana had the largest percentage of its Delta lands in forests--50 percent--in contrast to Arkansas and Mississippi with an average of 25 percent forested lands in their alluvial counties. Only 35 percent of Louisiana's alluvial lands were in crops at this time.¹

Three-fourths of the remaining 7.2 million forested acres in the Delta are in non-industrial private ownership. Not only the quantity of forest acreage is declining but also the quality of timber produced on the remaining acreage is poorer. While the forest industry presently holds 1.2 million acres, this is a slight decrease since the 1950 survey, with some firms converting their most productive soils to agricultural use. As it is difficult to purchase additional forest lands, in some cases industry is leasing land to be assured an adequate supply of timber. Landowners can then retain their title and mineral rights while the

companies manage their timber.

Hardwood veneer log production declined from 125 million board feet to 60 million board feet between 1963 and 1972 in spite of good market conditions. And those species that showed the largest decrease were the soft-textured hardwoods (sweetgum, tupelo and cottonwood, which grow best on alluvial soils and which are utilized by southern veneer manufacturers). Cover-type changes illustrate why quality of timber production is declining. In 1947 the overcup oak-water hickory type, which is of low value and is characteristically found on poorly drained clay flats, occupied only 19 percent of the forest lands in Mississippi's alluvial counties; this type now occupies 27 percent of those lands according to the most recent survey.²

The most affected type in Mississippi was the desirable sweetgum-water oak, which occupied more than 1/3 of the cleared lands and which has been reduced more than any other type by the landclearing activities.³

Statistics show another worrying trend--the rate of clearing is increasing rapidly. In the decade between the mid-'50s and '60s average annual clearing was only 37,000 acres but the rate of decline in forest acreage was four times that identified in earlier surveys.³ In the mid-'60s and '70s decade there was an average of 260,000 acres cleared each year, an enormous increase in land clearing

activity. This was a response to the increase in both price and demand for soybeans worldwide. In Louisiana 80 percent of those bottomland forests cleared for agricultural production from 1964-74 have been planted in soybeans. Soybean acreage in the U.S. has increased by 65 percent since 1965, and soybeans now ranks above wheat in value as a cash crop and is approaching corn.

As the value of soybeans as a cash crop continues to increase relative to the value of timber, it is estimated that more forest lands will become soybean fields until the remaining forests will be found only on those lands unsuited for farming because of poor soil or drainage. Such lands are found in backwater basins, swamps, and on the batture--that land area lying between the river and the levee and unprotected from floods. While 26 percent of the Delta's land area is forested now, this could decrease to about 20 percent. Farm price supports, flood control and large drainage projects continue to favor increased conversion to farming in the region.^{2,4,5}

The conversion of Delta lands from timber to soybeans is the result of market conditions that caused landowners to conclude that raising soybeans was their best land-use alternative. Forestry researchers, believing that the true rate of return on a forestry investment is higher than landowners perceive it to be, conducted an investment

analysis of mid-south bottomland hardwoods. They pointed out that in making the decision to convert to soybean production, little consideration was being given by the landowners to the values foregone--a common practice being either to ignore the forestry resource or to give it a value, or cost, as low as \$2 per acre per year. In their analysis the researchers assumed that stands were moderately stocked and were being managed to some degree. They then compared cost and yield data for stands on low, medium and high productivity sites and they found that indeed, the values (costs) used were much too low. They concluded that net annual equivalent returns ranged from \$5 to \$88 and they pointed out that in addition to these yields from timber production, the values accruing to society from watershed protection, wildlife habitat and aesthetic enhancement should be considered.⁶ It could be argued, however, that the private landowner should not necessarily be expected to absorb these social costs in his own investment decision.

A study conducted by the Economic Research Service of the U.S.D.A. agreed with predictions that conversion from woodlands to agriculture would continue in the lower Mississippi valley and southeast. Using 1970 cost and production figures they estimated that 37 million acres could profitably be converted to agriculture from woodlands. While allowing that 32.9 million acres could profitably be

converted to soybean production, this increased production without commensurate increase in demand would push the supply curve so far to the right that prices would decrease and some land would not be converted. There is an important qualifier to the statistics, however, and that is the planning, or repayment period and the interest rate used for computation. The authors conclude that if farmers have to clear woodlands with funds borrowed for 5 years at a 7 percent interest rate, there is a good possibility that few lands will be cleared.⁷

Researchers also point out that not only is the converted land lost as a potential timber source, but in the process of conversion, very little of the timber is utilized. Estimates are that as little as one-third is used. In Mississippi alone between 1957 and 1967 the cleared forest lands contained 150 million cubic feet of growing stock including one-half billion board feet of sawtimber. Only 30 percent of this timber was sold--the remainder was bulldozed into windrows and burned or used as fill in ditches. The reasons for this were identified as being the result of lack of information, land clearing techniques, or economic considerations. The landowners did not know the market--either the value of the timber or prospective buyers; it was easier to bulldoze trees than stumps; the land clearing took place too late in the year to

both log and clear before planting season, or the timber was too uneconomic to harvest.³ In any case, a substantial amount of timber was wasted.

The Issue

A case which exemplifies the present situation in the Delta is the Prevot case in Avoyelles Parish, Louisiana. In this case environmental and hunting and fishing groups--the Avoyelles Sportsmen's League; the Point Basse Hunting Club, Inc.; the Avoyelles Bass Runners; the Environmental Defense Fund, Inc.; and the National Wildlife Federation, Inc.--brought suit against a private landowner and two government agencies--the Corps of Engineers and the Environmental Protection Agency.

The suit charged that the land clearing operations of the private landowner (Prevot) would affect the navigable waters of the United States in violation of the Rivers and Harbors Act of 1899; result in the discharge of dredged and fill material and pollutants into U.S. waters in violation of the Federal Water Pollution Control Act; and violate Louisiana State law. Plaintiffs asked the court to compel the appropriate agencies to regulate the landclearing activities and asked the court to enjoin further clearing until federal jurisdiction had been determined and the necessary permits applied for.

The land at issue is the 20,000-acre Lake Long tract

lying in the Bayou Natchitoches Basin, which is a part of the Red River backwater area. This means that when the Red River floods, its waters overflow into the Basin and over the tract. When the waters recede, they flow back into the Red River. More than half the tract is subject to the average annual flood and almost all the tract is subject to the average bi-annual flood. The Red River is a navigable waterway.

The Basin comprises about 140,000 acres. While much of the acreage has been cleared of forests, there were approximately 80,000 forested acres remaining before the defendant's landclearing operation began so that the tract contained one-fourth of the Basin's remaining forest lands.

Albert Prevot had contracted with the owners of the tract, Elder Realty Company, to purchase it, and although he did not yet have title to the land, he began clearing it in June 1978. This clearing in effect was illegal, as there had been no wetland designation made at that time, and wetlands are subject to regulation under the Clean Water Act (the Federal Water Pollution Control Act as amended in 1977).^{8,9} The problem, however, is to determine what is wetland and what is not.

In 1974 the Fish and Wildlife Service undertook the construction of a wetland classification system that could be used consistently nationwide. Entitled "The

Classification of Wetlands and Deep Water Habitats of the United States" it notes that because of the diversity of wetlands and the continuity between wet and dry environments there is no single, correct indisputable, ecologically sound definition for wetland. In general, the report states that a wetland is an area where water is the determining factor in the types of soil development as well as the plant and animal communities inhabiting that environment. Beyond that, such factors as height of the water table and duration of surface water present further discriminate boundaries. In particular, the Fish and Wildlife Service's definition of a wetland is land where the water table is at, near or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes.¹⁰

Not only interpretive difficulty but also the division of regulatory authority contributes to the difficulty in wetland designation. While the Environmental Protection Agency (EPA) has the final authority regarding wetland permits, both the Corps of Engineers and the Fish and Wildlife Service are involved as well. Section 404 of the FWPCA Amendments of 1972 directs the Secretary of the Army, through the Corps of Engineers, to issue discharge permits for dredge and fill activities. However, the Administrator of EPA is authorized to prohibit such use of an area if there will be an unacceptable adverse effect on municipal

water supplies, shellfish beds and fishing areas, and wildlife or recreation areas.¹¹ Thus the Corps has the authority to issue permits, the EPA may object to such an issuance and override it, and the 1977 Amendments specifically provided for a coordination process with the Fish and Wildlife Service. The Conference Report declares that the Fish and Wildlife Service, because of its responsibilities to protect a very vital natural resource, should provide advice and consultation. They go on to state that "...the Fish and Wildlife Service should be involved at the beginning of the permit process and not after the fact".¹²

This means that three Federal agencies are involved in both the wetland designation process and the permit process. The problems arising from this sharing--or division--of authority are inherently obvious.

Several thousand acres had been cleared when the Corps issued a cease and desist order so that it could determine what areas of the tract were wetlands and would fall under their Section 404 jurisdiction of the Clean Water Act. The private defendants stopped the clearing until the Corps had completed their designation. The Corps stated that 30 percent of the tract was wetland. The defendants then continued to clear those areas not designated as wetlands.

The commercially valuable hardwoods had already been

harvested and the remaining vegetation was being cleared with bulldozers in a shearing and raking operation. The resulting windrows were burned. Testimony showed that such landclearing techniques disturbed the soil and leaf litter and together with subsequent discing levelled the land surface. A 3/4 mile long drainage ditch had been dug and 4 or 5 additional miles of ditches were planned.

On November 7, 1978 the court granted a temporary restraining order at the request of plaintiffs, which prohibited further landclearing, including ditch excavation, altering the land surface, destroying vegetation, plowing, discing or discharging any biologic material or pollutants onto the land. The landowner was allowed to clean up debris already on the ground and could log, but only using chainsaws.

On January 17, 1979 the court ordered federal defendants to prepare a final wetland determination within 60 days and the private defendants were given permission to engage in agricultural production without obtaining any permits on the 10,000 acres which had been cleared. They were, however, required to apply for a permit under Section 404 for any drainage alterations, such as ditch or levee construction, on these lands. The restraining injunction remained in effect on the remaining 10,000 uncleared lands.

On March 26, 1979 the federal defendants filed their

final wetland determinations, which included substantial portions of the land already cleared. They also included substantial differences in evaluation among the agencies. While the Corps of Engineers had determined that only 30 percent of the tract was wetland, the Environmental Protection Agency and the Fish and Wildlife Service disagreed, with EPA designating 80 percent as wetland and the Fish and Wildlife Service stating it was all wetland.¹³

The government agencies in addition stated that they considered a Section 404 permit necessary only for construction of drainage ditches, levees or dikes. The defendants could continue to plow, disc, etc. without a permit, and to shear and burn trees if the earth was not moved. Both plaintiffs and the defendant landowner objected to this statement concerning allowable activities, and the landowner objected to the wetland determination as well.

The court decided that there were two separate issues involved here and they should be decided separately: the allowable activities issue and the issue of wetland designation that in August 1979 has not yet been resolved. The first question before the court was whether the type of activity allowed in the government's statement, such as the shearing of trees to convert forested wetlands to other purposes, requires a permit under the Federal Water Pollution Control Act and Section 10 of the Rivers and

Harbors Act of 1899. The court found for the plaintiffs and held that such permits were required under Section 404 of the FWPCA.

The court's reasoning was that under the FWPCA, a permit is required if an activity involves point source pollution into navigable waters. In particular, Section 404 regulates the discharge of dredge or fill materials, but exempts certain activities. Permits are required, however, if the dredged or fill material is the result of an activity whose purpose is to bring an area of navigable waters into a use to which it was not previously subject. As "navigable waters" includes wetlands, these restrictions apply to those areas of the Lake Long tract which were so designated. The exemptions to the 404 permit requirement which applied to the case are as follows:

Section 404 (f) (1) "...the discharge of dredge or fill material--

(A) from normal farming, silviculture, and ranching activities such as plowing, seeding, cultivating, minor drainage, harvesting for the production of food, fiber, and forest products...

is not prohibited by or otherwise subject to regulation under this section."

The (f) (1) exemptions, however, are subject to the limitations of (f) (2) which provides:

Any discharge of dredged or fill material into the navigable waters incidental to any activity having as its purpose bringing an area of the navigable waters into a use to which it was not previously subject, where the flow or circulation of

navigable waters may be impaired or the reach of such waters may be reduced, shall be required to have a permit under this section.¹⁴

The court reasoned that:

- 1) There are point sources of pollution. A point source is an isolable, identifiable activity that conveys a pollutant. The landclearing of the landowner is a point source.
- 2) There is a discharge of dredged or fill material into navigable waters. Dredged material in the Act is defined as "material that is excavated or dredged from waters of the U.S." And by definition, wetlands are:

Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adopted for life in saturated soil conditions.¹⁵

Since wetlands include the vegetation growing on them, clearing the lands of such vegetation constitutes the discharge of dredge material. The court also noted that one of the basic intents of the Act was to protect the country's wetlands and to accomplish this, their vegetation must also be protected.

- 3) The activity of the landowner does not constitute normal farming or silvicultural operations. Exemption was intended only for ongoing operations

and not for conversion operations. Bulldozers are not farming equipment and clearcutting was not a normal silvicultural operation since no regeneration of timber was intended.

- 4) The land conversion will, by clearing the area of wetland vegetation, destroy the wetland and reduce the reach of the waters of the U. S. In addition, circulation and flow will be impaired.

For these reasons, the court found that the landclearing operations are subject to Section 404 regulatory procedures.

The government had argued that if earth is moved with landclearing equipment, a permit is required. On the other hand, if a wetland is cleared, but no earth is moved, no permit is required. The court found this argument to be a contradiction of the policy intent of the Act. "It seems to us that the government has ignored the purposes of the Act and has applied engineering and construction methodology to an environmental problem, totally frustrating the purposes of the Clean Water Act...If the destruction and conversion of wetlands to another purpose is accomplished, does it really matter whether it is accomplished 'where no earth is moved' or otherwise?"

In conclusion, the court followed the "balancing of equities" doctrine to allow defendants to engage in normal

farming operations on those areas already cleared, rather than requiring them to be reforested. The court declared this to be an equitable decision as the landowners had complied with both the court's and the Corps of Engineers' directives and the fact that there were conflicting determinations as to what areas were wetlands was not their fault. Any ditching operations on any of the wetland areas, however, whether cleared or not, would require a 404 permit.¹⁶

Ramifications

Several forestry associations, concerned that the court might reach a decision that would have a serious impact on harvesting operations in the Delta and the southeast, and for that matter any part of the country where wetlands exist, entered the case as amici curiae (friends of the court). They included the American Paper Institute, the National Forest Products Association, and the Louisiana Forestry Association. As amici curiae, interested parties who may be affected by the outcome of a case are allowed to present a brief to the court, stating their viewpoints.

The Associations' concern was that the court would decide whether "normal silvicultural activities" in the harvesting of timber would require a permit under Section 404. They strongly contended in their brief that Congress intended to exempt such activities from regulation under

(f) (1) (A) regardless of whether there was a discharge of dredged or fill material.¹⁷

The government's position was that normal farming and silvicultural practices that involved the discharge of dredged or fill material would require a permit; the defendant landowner's position was that their landclearing operations were normal silvicultural activities and thus did not require a permit; and the plaintiffs' position was that any land clearing on wetlands would require a permit. The amici curiae disagreed with all three positions, in particular refuting the landowner's claims that this was clearcutting. The Association agreed with the judge that it was not, since no regeneration was intended.

The court, in deciding the issue on the basis of Section 404 (f) (2) rather than (f) (1) sidestepped the issue of "normal silvicultural activities" and left it for either another case or the interpretive regulations to be proposed by the agencies; i.e. administrative order.

A major point, however, is that the court found that vegetation is an integral part of a wetland, because without it there would be no wetland. The court stated that dredged material on a wetland does not end at the earth or water surface but incorporates the vegetation existing there. The clearing of such vegetation thus constitutes the discharge of dredged material.

So the question of concern to the forest industry--whether future forestry operations in wetlands will require 404 permits-- is still unresolved. It is clear, however, that land conversion on wetlands will be regulated under the jurisdiction of the Corps--with EPA having the authority to overrule Corps' decisions or to independently enforce them. Whether this will retard the conversion of lands in the Delta, or result in preservation rather than utilization remains to be seen.

Summary

The issue in this case is conversion of wetlands from forests to agriculture. It is a case that could have had serious nationwide repercussions on the forest industry. However, because of the judge's finding that the decision could be made on the basis of the environmental impact of the conversion of forested wetlands rather than on whether normal silvicultural activities on wetlands are to be regulated, such an impact was avoided, at least for the present.

The decision was such that all protagonists in the issue--the private landowners, the forest industry associations, the government agencies, and the environmental and recreational groups were at least partially satisfied. The private landowners are able to use at least half of their land for the purpose they wanted--raising soybeans.

The Associations' position that the decision should be made on the conversion issue was agreed to by the court. The government agencies retain the authority to promulgate their own regulatory exemptions for normal silvicultural and agricultural activities, and the environmental groups obtained a favorable ruling that conversion of wetlands is to be regulated by the FWPCA. It is clear, however, that land use activities in our wetlands will be closely monitored and that forestry operations on such lands are apt to be questioned by interest groups in the future.

The industry now is concerned with the application of the wetland definition in field situations. This is the second half of the issue in this case, which the judge decided to try separately. The pretrial meeting is scheduled for January 1980 and the trial will be held in February. The judge may choose to decide the case on one of several points:

- (1) whether the agency decision was arbitrary or capricious or whether it was decided in a legally defensible manner--this would not set a precedent for future court actions;
- (2) a review of the merits of the decision; i.e. an interpretation of regulations--which would be precedent-setting;
- (3) a decision on the legality of the 404 regulations

themselves.

In addition, the landowner could also present an equity case, arguing that the lack of consensus among the various agencies had unfairly penalized him.¹⁸

In any event, the issue is far from settled.

Analysis of the Variables

The primary variables in this case are: (1) economic system, (2) resource management, (3) environmental factors, (4) interest groups and their communications, and (5) taxation and law.

Negligible variables are (1) value system, (2) transportation system and (3) land tenure.

To take the variables in the order in which they contributed to the issue, the initial one was the economic system. Based on economic considerations, the landowner decided that buying forested land and converting it to soybean production would be a good investment. Both demand and price for soybeans are increasing and based upon the time period of concern to him it was more rational for him to grow beans than trees. So he bought the land and proceeded to convert it.

This conversion affected the environment of the region. The area is at least partially wetland and wetland has been designated as an environment in the country that is of specific need of protection. This then, was a change in the

resource management of a wetland. The owner began clearing the land before he had obtained a determination as to what parts of the land were wetlands. He acted either in ignorance of the law--the FWPCA which protects wetlands--or merely ignored it. In any case, his action brought in interest groups.

The landclearing and management practices of the owner were standard in the region. The interest groups, however, took exception to them. Environmental groups and fishing and hunting groups wanted the waters and wildlife habitat protected and filed suit. This brought in other interest groups--the government regulatory agencies charged with enforcing the Federal Water Pollution Control Act; the Corps of Engineers and the Environmental Protection Agency-- and the forest industry associations, which perceived a threat to their own harvesting and land management practices both in the region and nationwide. The associations entered the suit as amici curiae so that they could present their viewpoints to the court, while the agencies attempted to specify their interpretations of what the act intended as well as attempting to define what constitutes wetlands. The court in turn was forced to amend these interpretations.

This brings us to the most important variable in the case: taxation and law. The intention of the FWPCA in part was to protect the nation's wetlands. One problem is that

there are many different definitions of what constitutes a wetland; and the second is that it has not been clearly determined what types of land use activities Congress intended to regulate under the act. The FWPCA Amendments of 1972 were amended again in 1977 to exempt existing activities or those having minimal impacts upon the waters so that the regulatory process would be more reasonable. In addition, the regulatory agencies were to issue their own regulatory interpretations of the law. In the summer of 1979 these have still not been published. In any case, the FWPCA has affected land use in the Delta and further clearing of forested wetlands--at least for conversion purposes--will be more difficult than before.

In addition to the effect of the FWPCA on the issue, the question of who has jurisdiction for determining whether land is or is not wetland was also an important factor. The initial determination that only 30 percent of the tract was wetland was overruled by the EPA's evaluation that 80 percent was wetland. In addition, the Fish and Wildlife Service, who has been evaluating wetlands for much longer than either of the other agencies, stated that in their opinion all of the tract was a wetland. According to present statutory authority, however, the Corps, while having primary regulatory authority, may be overruled by the EPA, and the FWS functions only in an advisory capacity.¹⁹

This multiple agency involvement makes it very difficult for landowners to determine what limitations may be placed on their use of land.

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DAINGERFIELD ISLAND

This case concerns the forest services of urban development and recreation and aesthetic values. The time is the present and the place is metropolitan Washington, D.C. The actors or protagonists in the issue are the National Park Service, recreational users of Daingerfield Island, the Alexandria City Council, and a private developer, Charles Fairchild.

The Island

Daingerfield Island is located on the western bank of the Potomac River in densely populated Alexandria, Virginia, across the river from Washington, D.C. Originally an island formed by sediment accumulation and landfill from the river, it has filled in and is now a part of the Potomac shoreline, jutting out into the river in the shape of a thick thumb. It contains 107 acres and is directly south of Washington National Airport, with the George Washington Parkway (GWP) serving as its western boundary. Both the Parkway and the Island are part of the National Park System and are administered by the National Capital Region.

The Island itself is heavily used by recreationists. Its main attraction is a sailing marina--the only public sailing marina on the upper Potomac--but it is also used by bicyclists, soccer and rugby teams, joggers, picnickers and

others. Many of these users have organized into groups who are especially interested in the management of the Island. These include sailing associations, environmental and civic groups, birdwatchers, and the residents of a high-rise residential complex, Marina Towers, which is located at the south end of the Island. The groups have made their opinions known to the Park Service regarding appropriate management goals for the Island. They include: more boating facilities, more biking facilities, more open space for picnicking and viewing, protection of the existing environment, and no new development. To reconcile these demands, given a relatively small land base, is no mean feat.

The Park Service is in the process of developing a long-range management plan for the Island. At present development is concentrated at the northern end of the Island where the sailing marina is located, while the southern section remains relatively natural forest and marshland. A 25-acre Park Service nursery and maintenance area is located in the center of the Island while along the river bottomland hardwood forest is emerging. This combination of riverfront, parkland, forest and marsh supports a wide variety of birds, vegetation and wildlife. The Island's elevation varies from 3 feet to 13 feet, and three-fourths of the area is below the 100-year floodline,

so that a substantial part of the Island is subject to recurrent flooding.

The legislative history of the park is as follows. By an act of June 6, 1924, amended April 30, 1926 a Commission was established whose purpose was the preservation of forests and natural scenery and the prevention of pollution in Rock Creek and the Potomac and Anacostia Rivers.¹ Later, in 1930, the George Washington Parkway was established by the Capper-Crompton Act as a part of the park and playground system of the National Capital.² The management goals for the Park which apply to Daingerfield Island are:

To perpetuate the native land and water systems along the Potomac River within this jurisdiction, while providing for compatible land and water uses.

To provide areas for river-oriented recreation uses such as boating, picnicking, field sports, as well as visitor services that are compatible with the native land and water systems.

An additional goal has been stated by the National Capital Parks Planning Commission:

To preserve the basic open space character of the site as part of the approach route to the Nation's Capital³

The Park Service sees the problem as one of expanding and upgrading existing facilities on the Island to satisfy the increasing demand for urban recreation opportunities in an area where such opportunities are limited, while at the same time satisfying the original management goal of

preservation of the natural resources of the area.

Urban forestry presents a unique set of problems for managers. Because of the proximity of large numbers of people, management decisions are very visible. In addition, the values of open space lands in such areas are greatly inflated because of their scarcity, so that there are pressures from both pro- and anti-development factions regarding management goals.

The legislative mandate of the Park Service to preserve and protect the land adds yet another problem. Its practice is to preserve lands, rather than manage them. Trees are left to age and die naturally. The National Capital Region does not have an urban forester on its staff, yet the courts have held that the agency is responsible for damage done by Park Service trees, as was the case when one fell in a road and caused an accident. These conflicting constraints make the agency's work still more difficult.

In addition to the problems that are unique to both urban forestry and the agency itself, the place or community--Washington, D.C.--is the most severe constraint upon land managing. The fact that it is a city populated by federal politicians and bureaucrats makes the job of the federal agency responsible for its open space land management an extremely political one. Any decision made is apt to be questioned, simply--and as would be

expected--because the affected parties are knowledgeable in the ways of politics and legislation.*

The Fairchild Tract

To further complicate management of the Island, a specific issue has arisen directly across from the entrance to the Island. This tract is leased by Charles Fairchild, a developer, from the Richmond, Fredericksburg and Potomac Railroad. It is a narrow, 39-acre strip of land between the Parkway and the railroad freight yards, heavily wooded and serving as a buffer for the Island and the Parkway, blocking the sight of the yards and their bright lights.

In the late '60's Fairchild proposed building a high-rise complex on property that he owned in Dyke Marsh, a wildlife area in Fairfax County, located on the Potomac River south of Alexandria. This was blocked by the County, so he next proposed a waterfront development on the property, with canals dredged from the marsh to furnish waterfront lots for 50 homes. Environmental groups urged the Park Service to take action to protect the marsh and a trade was proposed: the Park Service would acquire title to the Dyke Marsh property in exchange for access rights to the Parkway for the Fairchild Tract, which would make possible the development of that property. The exchange was opposed by Alexandria civic groups who accused the Park Service of inviting high rise development in the area and turning the

Parkway into "just another freeway."⁵

The Park Service states: "In June 1970 Fairchild and Co. exchanged with the United States 28 acres of Dyke Marsh, Alexandria, for access rights to the George Washington Memorial Parkway at Daingerfield Island in order to give access to the residential/commercial complex to be known as the Potomac Center."³ The agreement placed no limit on the size of the development, but required the U.S. to provide "adequate" access to Fairchild.

At the time of the agreement, the National Environmental Policy Act (NEPA) had been in effect for six months--since January 1, 1970--but no Department of the Interior guidelines for implementation had been promulgated. The Park Service did, however, publish a report on the proposed impacts of development on May 13, 1970. This was titled "Environmental Factors" and was based on a 1968 traffic study and on a Potomac Center development containing 4,000 parking spaces. However, Fairchild had given the Park Service nothing but artists' drawings of the proposed development. No detailed plans were submitted.⁶ At the time it was also assumed that a Northeast Expressway would be built that would serve as additional access to the area, and that a Metro (the Metropolitan Washington subway system) station would be built there. This report was filed with the Council on Environmental Quality on June 10, 1970 prior

to the signing of the agreement. In addition, the Department of the Interior had informed the Chairman of both the House and Senate Interior and Insular Affairs Committees of the proposed agreement in February 1970 and no objection was offered. The transaction was also publicized in the newspapers and while there was some opposition, the Alexandria City Council and the Alexandria Board of Trade favored the exchange. In 1971 the Dyke Marsh property was conveyed to the U.S. and all that remained for completion of the agreement was Park Service approval of construction plans for the bridge interchange and the various access points. Fairchild submitted preliminary sketches for the Center in 1973 and informed the Park Service that he would obtain necessary zoning permits from the City of Alexandria (the tract is presently zoned for industry) and would apply for a formal interchange approval later.

In October 1975 the Fairchild Company submitted revised sketches of the proposal that were rejected by the Park Service because they were not up to engineering drawing standards. Then in 1976 the Park Service undertook a further, more detailed environmental study because of the changes in Fairchild's plans and because of increased public concern over environmental considerations. This study used current Park Service guidelines for environmental assessments and the result was much different. The report

found that there would be serious adverse effects on the Parkway in the form of air, water and visual pollution as well as traffic congestion. There had also been changes in the original assumptions. The Expressway had been abandoned; no subway stop was proposed; and Mr. Fairchild's plans had been expanded to a current estimate of 5.3 million square feet, which would require 14,000 to 18,500 parking spaces under county zoning regulations.⁷

Based on the findings of the 1976 Park Service study, in April 1977 the Director of the National Capital Region recommended to the Washington office of the Park Service that Fairchild's access rights be acquired because of adverse impacts both on the Parkway and Daingerfield Island. The appraisal value of these rights was estimated at \$1.25 million. This figure was based upon the amount which a court had required Metro to pay for a right-of-way through the railroad property. (The Parkway access rights had added to the value of that property.) The figure was approved by the Mid-Atlantic Regional Office of Lands, National Park Service. No action was taken, however, although the Fairchild Company stated that they were interested in selling at the right price.⁷

While there had been considerable correspondence between Fairchild and the National Capital Region between 1975 and 1977, little progress had been made in the

development of an acceptable interchange design. So in early 1978 the Park Service hired traffic engineers to work on a consultant basis with those engineers retained by Fairchild. The Park Service stated that they would not require Fairchild to submit the construction drawings required by the 1970 agreement until the engineers could agree on satisfactory ingress and egress routes.⁸

Metro continued to be an issue as well. A Potential Growth Study Commission report by the City of Alexandria had recommended that no rezoning of the land be approved without a Metro station. However, Metro informed Fairchild that if he wanted a subway station he would have to pay for one at a cost of from \$8 to over \$20 million. In turn, Fairchild claimed that Metro and the city should pay for the station. He also told the city that the tract was already zoned for industry and that he could build office buildings with no additional permits at any time even though he couldn't build high-rise residential units as he had planned. He stated that although the city would review the site plans, all they could tell him to do would be to plant more trees.⁵

In June 1978 another group entered the picture. The Park Service was sued by the Daingerfield Island Protective Society (DIPS), a nonprofit organization, to block the proposed \$300 million complex. Suit was filed in the U.S. District Court to prevent construction of the bridge

interchange on the Park. This would for all practical purposes stop the project, as the Parkway was now to be its major access. Fairchild had submitted plans to the Park Service for an interchange with a 4-lane bridge over the Parkway and two 2-lane parallel service roads with 7 separate auto access points. The Park Service had objected to this elaborate system and alternatively proposed long 3-lane wide exits, wider than the existing Parkway, to stack expected traffic. Both plans were unacceptable to DIPS. They claimed that the anticipated traffic would have a disastrous effect on both the Parkway and the Island⁵ and added that the Potomac Center of 1978 was not the one agreed to by the Park Service in 1970. They pointed out that the Parkway was already at maximum capacity at rush hours, yet it was now to be the major access for the Center, rather than a secondary access. While transportation access alternatives had decreased, projected automobile use had more than quadrupled⁹ and the Parkway was already at maximum rush hour capacity.⁷

In addition, DIPS charged in its suit that the initial 1970 agreement had been conducted improperly, with no public hearings and no significant environmental review or environmental impact statement as required under the National Environmental Policy Act which went into effect on January 1 of that year. The plaintiffs, including a number

of sailors who use the Washington Sailing Marina on the Island, also stated that in addition there was insufficient legal notice or notice to the public of the trade in 1970 and they were unaware of the proposed Potomac Center development until the fall of 1977 when hearings were held on the long-range plans for the Island.

The Park Service responded that they had met all the legal requirements at that time, that no EIS (Environmental Impact Statement) or public hearing was required, that Congress had approved the trade, and that they were trying to protect the marsh and prevent intensive development. The Washington Post quoted a Park Service official as saying "That was the public forum of the time, the House and Senate Interior Committees--we'd never pull this off today the way we did then."⁵

Meanwhile the environmentalists were arguing--after the fact--that the Park Service should have bought or condemned the Dyke Marsh Property, with the Northern Virginia Conservation Council calling the "Fairchild giveaway...one of the most shameful betrayals of public trust in the history of the National Park Service and the Department of the Interior." The group also disagreed with the Park Service contention that it did not need to comply with NEPA because the Department had not established guidelines under the Act until September 27, 1971.⁵ A Washington Post

editorial also attacked the Park Service for the initial deal, saying "Thanks to a string of unconscionable decisions made by the National Park Service some years ago a monstrous proposal for a monster commercial development now threatens the George Washington Parkway in the vicinity of the marina north of Alexandria."¹⁰

None of these arguments affected the court decision. In July 1978 the suit was dismissed by the Judge as premature, as the Park Service was not considering a specific plan for the interchange and had in fact rejected Fairchild's initial plan two weeks earlier as "unacceptable and hazardous."⁹ The judge did say, however, that a full EIS on the impact of the proposed development on the Parkway might be justified as soon as the Park Service approved a plan. She added that because of widespread interest she would urge the Park Service "in the strongest possible terms to undertake their NEPA responsibilities and to involve all interested parties in the decision-making process at the earliest possible time."⁷

During the following months no progress was made in any direction, although Fairchild had stated he hoped to award a construction permit for the bridge by December 1. On November 8 the Department of the Interior notified Fairchild that no further interchange plans would be considered until Fairchild submitted a firm master plan, together with all

necessary federal state and local permits or approvals.⁷ On November 17 it was reported that the trees on the Fairchild tract were being cut. When questioned, Fairchild stated that the trees just got bigger and more expensive to remove every year and that somebody had asked for firewood and would cut them for very little. This did generate some action. The Alexandria Police Chief served notice that anyone cutting trees on the site would be arrested, as the City had passed an ordinance just 3 weeks earlier which required developers to obtain a permit before land-clearing so that trees could be saved. The Park Service issued a statement calling the action "upsetting and irresponsible" even though the trees were not on federal land.¹¹

But meanwhile the trees were cut--approximately 200 to 300 of them from 20 to 40 feet tall and up to 60 years old--and the Parkway and Island buffer was gone. The Washington Post called it "Murdering Trees Along the Parkway", the City of Alexandria issued a criminal summons to Fairchild, and Fairchild himself said "it's a bunch of baloney"¹² and stated that he'd ordered them cut to protest the National Park Service stalling his plans.¹³

Fairchild was charged with a misdemeanor because police had seen his 19-year old son (the firewood man) and two others cutting the trees. The case was dismissed by the judge, however, who ruled that the city had failed to prove

that the father had ordered the cutting or was responsible for it. In the judge's words, the city had failed to "put the smoking chainsaw in Mr. Fairchild's hand."^{14,15} It is not necessary to note that the episode, while possibly giving Mr. Fairchild some satisfaction, did not improve his chances for obtaining governmental cooperation at any level.

On February 27 the Alexandria City Council passed a draft resolution subject to a public meeting to be held on March 17. This resolution urged the Park Service to purchase Fairchild's access rights and any of his land below the 14' elevation and the 100-year flood line. It also urged the Park Service to replant the trees and restore the area.⁶

Fairchild attended the public meeting in March and notified the Council that he intended to begin construction on a 12-story office building on the tract within 10 weeks, with occupancy expected in about 2 1/2 years. He stated that his plans included a convention center and a shopping mall as well as residential development, and added that he'd held a lease on the land for 10 years, that a previous council had ratified his plans and that he didn't need access to the Parkway--that he could use Slater's Lane, a small road running by the tract. Furthermore, he said, "It is business, business we are talking about. This decision will affect Alexandria more than any other. Potomac Center

will bring in \$13.5 million in taxes for the city. That ground will be developed one way or another." The meeting was an emotional one, with one citizen calling his tree-cutting an "act of antisocial behavior." The council was reported to be very upset, and passed the resolution by a vote of 6-1.¹⁶

As of October 1979 the situation remains the same. No master plan has been submitted to the Park Service, no construction has begun on the site, and no access rights have been purchased. A Park Service official suggests that the economic climate may be such that development is not feasible at this time. However, a proposal has been made that the Park Service acquire the tract, or at least a substantial portion of it. This would provide a buffer for the Parkway and Island, and allow development on at least part of the land.¹⁷ This is only a proposal, and no action has been taken.

The most recent Park Service Assessment of Alternatives (July 1979) for Daingerfield Island states that "The present National Park Service position is to continue to implement the provisions of the contract in its entirety." It also notes that a contract appraiser has been hired to develop a new appraisal for the purchase value of the access rights, and lists the alternatives available to the agency as these:

- 1) If Fairchild submits plans, National Park Service

could choose to not honor the agreement by refusing to process the access construction plans. This would lead to a suit by Fairchild for damages and/or specific performance.

2) If Fairchild submits plans, NPS could implement the provisions of the contract by processing approval of the construction plans for the access. Completion of this process would involve an environmental assessment, public involvement, and referrals to appropriate agencies. It would result in issuances of the permits to Fairchild to commence construction.

3) The NPS could acquire the access rights either by seeking appropriation using Land and Water Conservation funds or using part of a \$3 million escrow fund the agency has accrued from Metro in payment for construction on U.S. parklands in the Washington Region.

4) The NPS could acquire in fee the entire 37-acre Fairchild tract. This would require legislation and require action on the part of the National Capital Planning Commission to amend the boundary of the parkway. The appraised value of the property is \$7.75 million.¹⁰

In any event, it is clear that the issue is not settled, and if development begins before a compromise has been reached, the conflict will be reactivated.

Analysis of the Variables

Land tenure is a primary variable in the case and in

fact initiated the issue. Because Fairchild had land tenure rights of varying degrees to two tracts of land, he was able to use those of one to expand the value of the second. He traded his ownership rights to the Dyke Marsh tract for access rights to the Fairchild Tract, without which those property rights would have been of very little value.

Resource management is another primary variable, important in three different areas of the case. First, Fairchild's management plans for the Dyke Marsh lands were unacceptable to environmental groups and the Park Service and brought about the exchange of rights between the Park Service and Fairchild. Second, the proposed management plan of the Park Service concerning the bridge interchange was unacceptable to local interest groups and brought about the court case and pressure on the Park Service to repurchase the rights. Third, the developer's management plan for the Fairchild Tract was unacceptable to the Park Service, the interest groups, and the Alexandria City Council and caused the project to be at least delayed, if not stopped.

Environmental factors is a third important variable. Because of environmental concern for Dyke Marsh, the Park Service initiated the 1970 trade to ensure its preservation. Environmental benefits accruing from the Fairchild Tract were also highly valued and the destruction of the trees caused a reaction from all the interest groups that would

appear to limit the developer's future chances for obtaining favorable action from anyone. The developer in fact used environmental factors first to acquire necessary access rights and then to punish the Park Service for inaction. The scarcity of natural environments in such an urban setting increases the importance of this variable to a great degree. 200 trees in an urban environment is comparable to a forest in a rural setting.

Transportation system is another primary variable and probably the most important one. It was the key to the developer's plan for his high-rise complex. Without adequate access he could not develop the site. The Park Service has a mandate to protect the Parkway, while users of the Island were concerned that the road was already at maximum capacity and a large interchange would not only create traffic problems but damage the aesthetic values of both the Parkway and the Island. In addition, mass transit was a factor, with the developer counting on Metro and Metro stating that the developer would have to build his own station if he wanted one. Bus service would also be cut to the area after Metro was built, and this increased reliance on private automobiles for users of Potomac Center would make it more difficult to get Park Service approval for extensive access points to the complex

As is usually the case, interest groups and their

communications was also a primary variable, with groups putting pressure on the Park Service to preserve Dyke Marsh, fighting in court the proposed bridge interchange and attempting to limit development of the Fairchild Tract. It is impossible to know how the Park Service would have reacted without such pressures, but the Alexandria City Council was an interest group that had the authority to act on their own and did so.

These were the primary variables in the issue. Secondary variables included value system which of course underlies all the others. Values given to a relatively small tract of land near a railroad yard in fact were the issue. The participants in the case placed a much higher value on open space, aesthetics, and a few trees than they did on an extensive development bigger than Crystal City that would bring in millions of tax dollars to a city government. Even the city government itself felt this way. The emotions generated by the tree-cutting are a good indicator of the worth of those trees to the people in the area.

This leads to the economic system, which as indicated above is outweighed by other factors. Economics may in fact prove to be the most important variable with regard to actual development of the tract. If financing is not available, or the development appears to be a poor risk to

investors, the issue concerning type and extent of development may never recur.

Another secondary variable is taxation and law. While laws may become more important later on if the Park Service is taken to court on the validity of its initial agreement with Fairchild with regard to NEPA requirements, at present the laws involved are local zoning and tree-cutting ordinances. The City Council has already indicated that it is more interested in environmental considerations than additional taxes.

The primary variables then are (1) land tenure, (2) resource management, (3) interest groups and their communications, (4) environmental factors and (5) transportation system.

The secondary variables are (1) value system, (2) economic system and (3) taxation and law.

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THE CONGAREE SWAMP

This case concerns a southeastern river bottomland hardwood forest. The time period is the 1960s and 1970s and the forest services at issue are preservation and wood production, with recreation playing a minor role. The place is South Carolina, for while preservation of the Congaree Swamp in Richland County is the issue, protagonists include South Carolina environmental groups, the South Carolina Forestry Association, and the Beidler family, absentee owners of the land.

The Region

The Swamp

The Congaree Swamp has been called "Redwoods East", "The Greatest Unprotected Forest on the Continent", and "Forest of Champions" among other superlatives by various environmentalists. Scientists have also referred to it as the last extensive stand of virgin river bottomland hardwoods in the southeast. Because of its uniqueness, it became the focus in the early 1970s for a major preservation effort when timber harvesting began on the Beidler tract, which comprises most of the virgin timber in the swamp.

The swamp is located on the Congaree River approximately 17 miles south of Columbia, the capital of South Carolina. The river is part of the Santee River

system--548 miles in length--originating in the mountains near Asheville, North Carolina. The Congaree itself is only about 60 miles long, formed by the union of the Broad and Saluda Rivers at Columbia and flowing along a sinuous, circuitous path of 60 miles to cover a distance of only 30 miles to its junction with the Wateree River. At this point the two rivers become the Santee River, which has the only true river delta on the east coast and meets the Atlantic Ocean at Charleston, South Carolina, 143 miles away.

At one time the Santee River floodplain was one vast swamp forest extending up most of the lengths of the Wateree and Congaree for a distance of about 200 miles. However, a combination of logging and dams has either inundated the floodplain or has altered or destroyed its ecology. Of all the rivers in the Santee system, the Congaree is the only river that is not dammed. There are more than twelve dams on the other five rivers in the watershed. Much of the former Santee Swamp is now under the waters of Lake Marion, formed by the Santee Dam that has backed up the river waters 40 miles upstream to the junction of the Congaree and Wateree Rivers.

History

The timber industry moved south in the 1880s after the northern forests were depleted, and in the next 20 years most of the southern swamp forests were cut. A large part

of the Congaree Swamp escaped, however, because it was owned by Francis Beidler of Chicago, a lumberman who had studied timber conservation techniques in Europe. When timber in the Great Lakes area was exhausted, Mr. Beidler went south rather than west. He explored the swamp forests of the Santee, Congaree and Wateree Rivers and borrowed \$1 million from the University of Chicago to buy more than 100,000 acres along the three rivers between 1890 and 1905. He then formed the Santee River Cypress Lumber Company, built a sawmill in the Santee Swamp and began cutting cypress. This was the only cutting in the Congaree and ended about 1910, when the timber operations proved to be unprofitable. The sawmill was closed in 1914.

Taxation and law

Francis Beidler died in 1924, but his heirs retained the land because, as his son wrote, "...Francis Beidler convinced my mother and me that the forests were a vital national asset that should be preserved." The family continued to pay taxes on their lands for almost 70 years while receiving no revenues from timber sales. They did lease the Congaree Swamp property to the Cedar Creek Hunt Club, however, which built several clubhouses, two and one-half miles of roads and 25 miles of jeep trails in the swamp. The Club polices the area to protect it from trespassers.

In the early 1940s the Santee Dam, a large hydroelectric power project, was built on the Santee River. The project encompassed 60,000 acres of Beidler lands in the Santee Swamp--over half their South Carolina timber holdings. To avoid condemnation they were forced to sell their property to the federal government at a price they considered unfair. In addition, the project caused the extensive flooding of prime timber, in direct conflict with the family's conservationist beliefs. It may be fairly assumed that as a result the family did not acquire a high regard for governmental agencies. Meanwhile, the Congaree Swamp trees continued to grow.

Environmental factors

The Congaree is a slow-flowing, meandering river, dropping only about six inches per mile and lying at elevations between 90 and 120 feet above sea level. The swamp lies for the most part on the north bank of the river. The Congaree River is in the Coastal Plain on the highest of several terraces below the "fall line"; the erosion front or division between the metamorphic and igneous rocks of the Piedmont and the unconsolidated sediments of the Coastal Plain. The rocks at the Congaree fall line rapids are about 300 million years old, and overlain by sedimentary marine beds, slope to the southeast through the Coastal plain to the present ocean shore. These sand deposits, about 80

million years old on the upper terrace, were formed into great dunes by the waves and tides when this was an ancient coast line. They are now called the Sand Hills. The river cuts through them and in places these sand bluffs are more than 300 feet high on the southern shore. On the northern shore, however, there are no high bluffs and so the Congaree floods in this region when rains are heavy. Its floodplain extends for about three to five miles on the northern side of the river, but only one-fourth mile or less on the south, confined by the bluffs. This is the region of the Congaree Swamp.¹

While the Congaree Swamp is labelled ecologically as a forested swamp, conjuring up pictures of impassable waterways and no dry land, in actuality it is flooded only periodically and is a river bottom hardwood forest community. The periodic flooding ensures its continuing fertility, as rich upstream alluvial sediments are deposited in its sloughs and bogs that absorb the overflow. In addition the swamp serves as a filtering mechanism, absorbing upstream pollutants and cleansing the waters as they pass through. The river changes course over time and former channels can be identified by differing vegetative patterns in the floodplain.

The swamp extends along the north river bank in a strip for approximately six miles in length and two to four miles

in width. It encompasses about 70,000 acres and is richly diverse in vegetation as it has several elevations, each supporting a variety of species. The lower level is inundated for much of the year and the species that can survive in standing waters, such as baldcypress and water tupelo, are found here. The upper level, from one to four feet higher, is flooded for only short periods (a few days or weeks at a time), and oaks, hickories, ash and the most prevalent species--sweetgum--grow on these lands. Old cattle mounts, built by slaves to furnish a refuge for livestock during high waters, provide higher grounds where species such as dogwood and tulip poplar can exist. In addition there are some stands of loblolly pines found both along the northern edge of the swamp as well as within it.

This diversity of species makes the area a valuable one for scientific study. A South Carolina Wildlife Department Study identified 11 subtypes and 32 community canopy types in the swamp. The area is also a haven for wildlife, sheltering extensive bird populations, including several wild and endangered species, as well as both game and non-game animals.

But the uniqueness of the swamp is due not only to its vegetative diversity but to the size of its trees. Variouslly labeled by scientists as "the last extensive swamp bottomland forest remaining in the South", "the largest

tract of climax swamp forest left in America", and "the only large remaining stand of virgin mixed bottomland hardwoods on the East Coast", the fact is that the sheer size of the trees makes the region a unique natural environment. It has been compared to the redwoods of the West Coast--with the additional benefit of species diversity in its huge trees--and given the name "Redwoods East".

The largest bitternut hickory, swamp privet, possumhaw, sweetgum, overcup oak and loblolly pine in the nation are in the Congaree. There are 35 different tree species in the swamp and the state champions of 24 of these species are located here. A loblolly pine was found with a circumference of 15 feet 10 inches and a height of 144 feet, far exceeding the height of the former national champion loblolly at 128 feet. This excessive height is characteristic of the swamp trees. A National Park Service survey in 1961 reported that a study team had found a baldcypress, southern red oak, swamp white oak, willow oak and American holly that all exceeded the heights of the record trees of the American Forestry Association. Some of the trees exceed world record heights, and all of the swamp has still not been explored.

The champion sweetgum in the swamp is 125 feet high and measures 19 feet 8 inches in circumference. A biologist surveying the Beidler tract said that he "started keeping a

record of all the sweetgums we found that were larger than 13 feet in circumference, but when we got 60 or 70 this size we stopped measuring them.² Cypress trees have knees reaching over six feet in height.³

The age of the trees is also exceptional--a loblolly stump was found to contain 320 annual rings and the cypress that were cut earlier were estimated to be about 700 years old. One cypress had 1600 growth rings. This was--and is--a forest of giants.

The loblollies are of particular interest to the scientists as they are co-existing with hardwoods and reaching ages far beyond that which would be expected. More than one age group is present, with one approximately 180 years old and others as old as 300 years. Naturalists speculate that natural disasters, such as droughts followed by fire, or hurricanes that opened up the stands, allowed these pines to regenerate and survive. At present, although no pine regeneration is taking place,³ the forest is an extremely healthy climax forest with few dead and dying trees.

In short, the scientists point out that while much effort is being expended on research to develop genetically superior trees, the swamp contains an abundance of such trees and is an area that should be preserved for studies. There are approximately 11,000 acres remaining of the virgin

climax forest, and most of this is on the Beidler tract. In addition to the scientific value of the trees in the swamp, scientists state that the ecology of the swamp is a valuable natural resource and should be preserved, as so many of the swamp environments in the south have been destroyed or altered.

Resource management

South Carolina naturalists have appreciated the values of the swamp for years. In 1953 the University of South Carolina was using it as a study area, and in 1954 Harry Hampton, who helped organize the South Carolina Game and Fish Association in 1931, was an editor of "The State" newspaper in Columbia, and hunted and fished in the swamp regularly, wrote the Beidler family to ask if they would consider making their tract a memorial in perpetuity to gain a tax advantage. They responded that 60,000 acres of their best timberlands had been taken for the Santee River project and they could therefore not consider such a proposal.

However, more conservationists and naturalists became interested in the swamp and continued to try to preserve the swamp against the day when the Beidlers might decide to resume cutting. A "Beidler Forest Preservation Association" was formed but accomplished nothing. The National Park Service, however, did become interested and began studying the area in 1959. In 1963 they issued their report,

proposing that 21,000 acres, including the Beidler property, be designated a National Monument to provide "an outstanding example of a near virgin southern hardwood forested swamp". They justified its inclusion as a National Monument on scientific grounds because of its unique biological and geological attributes, while at the same time noting that it would be a refuge not only for wildlife, but for people who could enjoy a tranquil and beautiful natural environment. They proposed minimal facilities to preserve the fragile environment, with trails, possible access by water, and an emphasis upon interpretive exhibits with naturalists as staff personnel.⁴

The proposal languished, as it received almost no public support in South Carolina, although groups such as the Audubon Society, the University of South Carolina, the Charleston Museum and the Nature Conservancy instituted studies of the area to determine what species of plants and animals were present. Meanwhile, everyone hoped that the Beidlers would not authorize timber sales. The area during these years was used for hunting, fishing, hiking and research as well as a wilderness haven for naturalists.⁵

In 1969 conservationists learned that parts of the tract were being cut. The Beidler business manager wrote: "We are harvesting overmature trees on a selective basis which would be lost if not saved. This is according to our

long term harvesting program for hardwoods on our Congaree lands and other growth lands to prevent South Carolina hardwood mills and employment from closing."⁶ Harvesting was authorized on 500 to 1000 acres per year, contracted for the most part to the Georgia-Pacific Corporation.⁷

The initial 500-acre cutting spurred conservationist efforts to preserve the swamp. The question was not only how to preserve the swamp, but in what form. The Park Service proposal to designate it a National Monument would exclude hunting, and as hunting is an important part of the South Carolina culture, there was concern that sufficient support could not be generated to pass such a plan. The conservationists then proposed to the Park Service that it be designated a National Preserve including 16,000 to 18,000 acres of public lands in the Santee Swamp, 40,000 to 45,000 acres in the Congaree, and approximately 8,000 acres in the Wateree Swamp—a total of 70,000 acres. The "Preserve designation would allow hunting to continue and provide more flexible management options. The swamp would be open for public hunting and fishing for the first time and in addition the whole area could serve as a vast natural laboratory for scientific and educational studies."¹

Opposing the management goals of the preservationists were the South Carolina Forestry Association, the Cedar Creek Hunt Club, and the Beidler family, who admitted that

the entire Congaree forest of 15,000 acres was scheduled to be cut over a period of about 15 years.⁶ They agreed, however, to save the record trees, and both the family and the Forestry Association felt that this was more than sufficient. But others countered with the argument that cutting at all would disturb the natural ecology of the forest by affecting the soil and water regimes so that the remaining record trees would be more susceptible to damage from wind or disease.

The reason given for cutting--to harvest overmature trees--was also questioned. Several scientists protested that the forest was a very healthy climax forest, that regeneration was occurring, that there were few dead or dying trees, and that the "overmature" trees would not be lost if they were not harvested.^{1,5}

Economic system

The South Carolina Forestry Association launched an effort to stop the preservation of the swamp, stating that in view of the depressed general condition of the national economy--in particular, the high rates of both inflation and unemployment--the preservation of a swamp didn't seem to deserve a high priority by either state or federal governments. They pointed out that forestry was the third largest industry in the state, generating over a billion dollars annually.⁸ They said that the south had already lost

too much timberland to urban development and parks, and that South Carolina was losing 18,000 acres per year.⁹ They stated that over 3,200 people were at least partially economically dependent upon timber harvested in the Congaree Swamp. In addition, the reversion of 54,000 acres of private property to the federal government would deplete state tax revenues severely. (This figure was based on the 70,000-acre proposal.) The state would also lose millions of dollars in costs required to transport, process and manufacture timber from other sources. The Association also argued that the costs of the proposal would be enormous. The purchase price of such a land acquisition would be from \$60 to \$70 million and in addition there would be tremendous development, operation and maintenance costs.⁹

To respond to these statements concerning the economic costs of preservation, in 1975 the Sierra Club commissioned an economic study of the impact of the proposal on the timber industry and Richland County. The study focused on the 14,686.43 acres owned by the Beidler family, as this comprises the largest portion of the 21,000-acre Park Service proposal and contains all the large tracts of virgin trees. A 50-mile radius around the Beidler tract was used as its Timber Market Area reference to determine the relative importance of Beidler timber to the local wood-producing industry. This area included nine counties; parts

of other counties in the area were eliminated so that the reference area was a conservative estimate and the Beidler tract impact relatively larger. Three industrial sectors were used: lumber and wood products, furniture and fixtures, and paper and allied products.

The Beidler tract is part of the southern hardwood territory, which produces a large percentage of the nation's hardwood sawtimber. South Carolina had 6.9 million acres in commercial hardwood forest land according to its latest 1968 timber inventory. The trend in the South had been for hardwood growth to exceed removals. This was the case from 1962 through 1970. A Forest Service report in 1973, however, noted that preferred species such as walnut, sweetgum, and yellow birch were being more heavily utilized than other species, and this factor together with extensive cutting of large diameter trees was causing a decline in the quality of hardwood inventories. In South Carolina during this period, however, both hardwood inventories and the number of large dbh trees increased. This was true in the Market Area studied, where in 1967 net annual growth of all hardwoods was 140.5 million board feet and removals were 125.1 million board feet. Net growth of all species was 393.3 million board feet and removals were 271.1 million board feet.

Inventory data indicated that the Beidler tract had 6.3

percent of the Market Area's hardwood sawtimber inventory. For over 50 years the tract was not harvested and did not affect timber supply at all. From 1970-74, however, about 3,000 acres were contracted out with 1,653 acres recorded under six contracts, four of these to Georgia-Pacific. The total value of these recorded contracts was \$1.6 million. From this information it was estimated that 91 jobs and a payroll of \$623,025 were associated with the processing of Beidler timber during 1971-73. The tract provided 1.8 percent of the hardwood sawtimber supply during this period. In subsequent years the tract supplied the veneer log market. This market area is more extensive; for example, Georgia-Pacific's market extends from 60 to 100 miles. The conclusion of the report was that timber was available from other sources if the Beidler tract were preserved, but that if a shortage of veneer logs developed, in the short run buyers would either have to pay higher prices and transportation costs, or curtail usage. This would affect production. In the long run, the market would adjust.

With regard to the effect of preservation on Richland County tax revenues, the study found that 1974 taxes on the entire tract were \$6,907, or 4.7 cents per acre. This is .006 percent of the total real property taxes in the county. If the swamp were promoted as a tourist attraction, it was noted that tourist expenditures could prove to be a

significant economic benefit to the county. This would depend upon the type of management program instituted, however.⁷ Tourism is South Carolina's second-largest industry, contributing over \$490 million annually to the economy. The Santee Swamp had 70,000 visitors in 1973.¹

Transportation

The report pointed out that the swamp is easily accessible by car, located within 30 miles of three interstate highways with good paved roads to the edge of the swamp. In addition, transportation through the swamp could be by water, as proposed initially by the Park Service, to lessen visitor use impacts on the ecology and at the same time provide an opportunity for people to appreciate the natural environment in an appropriate manner.⁷

The Park Service proposal had noted that the swamp lies within a day's drive of 1.5 million people. Atlanta, Charlotte and Savannah all are within 200 miles, while Columbia, the capital of South Carolina, is only 20 miles northwest. In addition, the swamp is accessible to the large populations on the Atlantic Seaboard. This access to major population centers was an additional reason given by the Park Service for preservation--a remote, unique area that at the same time is accessible to the public.⁴

Value system

The values placed on the swamp were mentioned

repeatedly by the scientists and naturalists writing about it. They noted the public's conception of a southern swamp--perpetually flooded, impassable, full of mosquitoes, snakes, fugitives from the law, and various other sinister and undesirable things. They then described the realities of the swamp and discussed how the public must be educated to realize what the swamp really is--a unique, desirable natural resource, peaceful and isolated and pleasant and dry for about seven months of the year; a place to study wildlife and unusual vegetation; to explore areas never before explored; and to experience a true sense of wilderness. These psychological benefits of the swamp were emphasized as much as its scientific benefits.

The area surrounding the swamp is rural and sparsely populated. There are a few stores and churches, and most of the residents are tenant farmers and day laborers.* The relatively few hunters, fishermen and naturalists are the local residents who "use" the swamp. In particular, the members of the Cedar Creek Hunt Club had a strong interest in the swamp and were opposed to preservation. Hunting in the South was called by the New York Times a "masculine Dixie ritual". It is an integral part of the culture and embodies much more than just the killing of animals. It is a social tradition and such a club may be composed of influential leaders in business as well as politics. One

member expressed his support for cutting the timber, saying, "It opens up the swamp and provides browsing places for deer. Besides, there are so many of these (giant oaks) around, in some parts they blot out the sun."⁹

We thus have three value systems involved: (1) the foresters who placed utilitarian values on the trees that produce wood products, (2) the hunters and fishermen who valued the swamp's wildlife and the cultural values associated with it, and (3) the scientists and naturalists who valued the biological, geological and aesthetic attributes of the swamp.

Interest groups and their communications

The cutting that began in 1969 acted as a catalyst for the various individuals and organizations concerned with preserving the swamp. Efforts to generate political support continued into 1973 while cutting continued, but it became obvious that an intensive effort would be needed to generate citizen support for the proposal. The Sierra Club became involved and in the spring of 1974 the Congaree Swamp National Preserve Association was formed. The Association consisted of conservationists, sportsmen and citizens, and focused its efforts on acquiring and preserving the Beidler tract. In a year's time it presented some 400 slide programs, distributed over 40,000 brochures and obtained 10,000 signatures on petitions to save the swamp. Both

local and federal politicians began to feel the pressure.

The South Carolina Forestry Association and the Cedar Creek Hunt Club meanwhile mounted a public information effort of their own, with brochures and media appearances emphasizing the economic costs of the proposal and noting that the swamp had been cut and cultivated previously and thus was not "virgin".

In December 1974 the Beidlers registered a lobbyist in Washington, D.C. "in opposition to proposed, but as yet un-introduced bills to create a National Park or Preserve in the Congaree Swamp area of South Carolina". In the state, the South Carolina Environmental Coalition, a statewide action group, added their resources to the preservation effort with press releases, slide shows, fund-raising projects and meetings with influential politicians. And still another group entered the picture as the Columbia Audubon Society formed a special committee called the Congaree Swamp Action Project for the specific purpose of raising funds to support the preservation effort.¹⁰

In early 1975 the Richland County state legislative delegation voted to introduce a resolution providing for a study of the proposal and the governor authorized a study of alternatives by the South Carolina Heritage Trust Program. In June he visited the swamp on a trip sponsored by the forest products industry and announced that he supported

selective cutting and management of the tract. He also stated that he opposed governmental condemnation of private land. While he agreed that parts of the swamp might be worth saving and that the state might want to buy a small part of the Beidler tract for scientific study, he rejected the proposal to form a 70,000-acre National Preserve.¹¹

This stand was criticized in several of the state's newspapers. The Charleston News and Courier editorialized, stating that the preservationists didn't want to "take" the swamp, but rather advocated paying a fair market price for the land.¹² The former Chairman of the American Museum of Natural History's Department of Conservation and Ecology, who had visited most of the remnants of virgin forests in the United States, wrote the Governor and asked him to reconsider, saying that he considered the Congaree bottomlands to be unique, and the most beautiful as well as scientifically valuable unprotected forest in the country.¹³

The major environmental groups met with the governor for the first time on July 22, 1975. Included were representatives of the Congaree Swamp National Preserve Association, the Columbia Audubon Society, the Columbia Sierra Club, and the South Carolina Environmental Coalition. After the meeting the governor stated that he was not opposed to preservation and would remain open to suggestions. He said that his major concern was that

property owners would receive a fair price for their lands. In addition he said that he would not oppose using state money to purchase lands. Following the meeting the Director of the Environmental Coalition stated that two things needed to be done: (1) Congress must be convinced that the swamp should be purchased with federal funds and preserved, and (2) the Beidler family must be convinced that selling the land to the federal government would be a wise economic move.¹⁴

To accomplish these goals the groups geared up for a "Congaree Action Now" national rally and conference to be held in Columbia on September 20, 1975. At this time there was no legislative support for the proposal, either at the state or the federal level, in spite of expressed Park Service interest, and the intent was to show politicians the extent of public concern. National conservation leaders and scientists were invited to speak and it was estimated that approximately 300 would attend. More than 700 showed up and a national campaign was mounted to push for Congressional action.^{15,16,17} They asked for: (1) a moratorium on logging in the Beidler tract until Congress made a decision regarding acquisition; (2) an expedited study by the National Park Service; and (3) the introduction of legislation by Representative Spence to preserve the 21,000 acres already studied by the Park Service. As Spence had

already declined to introduce legislation, the groups focused their lobbying efforts on him.¹⁸ The National Preserve Association began mailing skeleton keys to the Congressman to symbolize the fact that they considered him the "key" to action. In addition, he was the recipient of an extensive letter-writing campaign.¹⁹

On September 23, 1975 the Representative announced that he intended to study both sides of the issue; particularly the results of a study commissioned to the South Carolina Wildlife and Marine Resources Department.^{20,21} This study was in effect the equivalent of an Environmental Impact Statement for the area, as the Park Service did not believe that their initial 1963 study was adequate as it had not considered alternative management plans. The service did not have adequate funding to complete another comprehensive study and so the Wildlife Study was a joint product of the two agencies. The study was made public in December 1975 and supported acquisition of the entire tract, rather than a small representative area as the Beidler family and Forestry Association had proposed. The study stated that this was the alternative that best ensured protection of resources over a period of years.²²

In November 1975 Mr. Beidler announced that his family would probably agree to sell their entire tract for its fair market value. As the federal government was the only buyer

that could afford to buy the property, he offered to meet with Congressman Spence in Washington to discuss the introduction of legislation.²³

In the spring of 1976 Congressman Spence introduced legislation into the House of Representatives to establish a Congaree Swamp National Preserve under the management of the Park Service, while two similar bills were introduced in the Senate by South Carolina Senators Hollings and Thurmond. These bills proposed the creation of a Congaree Swamp National Preserve to encompass only the Beidler tract. The area proposed for acquisition had been decreased to this amount because the groups advocating preservation were anxious to move as fast as possible to halt the cutting. In addition, this would protect most of the virgin timber. The groups believed that passage of the bill would be more assured if a lesser amount of land was involved, and that negotiations would be much less difficult with only one landowner.²² Testimony at the legislative hearings indicate the pressure brought to bear by the environmental coalition. Proponents testifying included a forester, ecologist, botanist, biologist, swamp ecologist, recreational specialist and economist; representatives of the National Parks and Conservation Association, Sierra Club, Wilderness Society, Friends of the Earth, National Audubon Society, and American Rivers Conservation Council; and ten local

conservation leaders from North and South Carolina. In contrast, less than ten forest industry representatives and property owners testified in opposition to the proposal.²⁴

Land tenure

The final bill, sponsored by the entire South Carolina legislative delegation, was passed in October 1976 after much legislative manipulation. In final form it authorized acquisition of the entire Beidler tract, not to exceed 15,200 acres and at a maximum acquisition cost of \$35.5 million, with an additional \$500,000 for initial development. The tract would be under Park Service management, and within three years the Secretary of the Interior was required to submit a management plan, recommendations as to the suitability of areas for wilderness designation, recommendations for purchase of additional lands to serve as a protective buffer, and an estimate of costs (P.L. 94-545).²⁵

The designation of the area in the bill's final version was changed to "Monument" rather than "Preserve". This would prohibit public hunting in the area, although fishing would be permitted. The change was made both because Congress felt that "Monument" was a higher classification than "Preserve" and the Congaree warranted such a higher designation, and because testimony was presented at the mark-up hearings from a Cedar Creek Hunt Club member that

the area could not support public hunting.²²

Effective October 1, 1976 the Beidlers agreed to a one-year logging moratorium while the terms of acquisition were decided. One year later no agreement had been reached. The government refused to acquire the tract with a "Declaration of Taking", a threat of condemnation that would give the Beidlers a tax advantage. The Beidlers then threatened to resume logging and the government filed a "Motion for Order of Possession". An agreement was finally reached in February 1978; the government paid the Beidlers an initial \$2 million toward the purchase price and in return gained temporary possession of the land for one year--to be extended one day for each day that the Beidlers were late submitting their appraisal. As a result the government retained possession through August 1979. We therefore have a situation whereby the government has possession of the land, the Beidlers have title, and the Hunt Club has the authority to restrict access to the property. Visiting the Monument requires authorization from both the Hunt Club and the Park Service.

In July 1979 Beidler appraisals are complete, but are reportedly above the \$35.5 million authorized by Congress. If the two sides cannot agree on a fair market value, a three-member Lands Commission will conduct a hearing and the final decision will be made by a U.S. District Court Judge

in South Carolina. The trial is presently scheduled for January, 1980.^{22,26}

Summary

This issue is unique in that the most important attributes of the area in question are its biological and geological characteristics. These attributes are such that their preservation became important to national as well as regional interests. It is interesting that much of South Carolina was not aware that it was a significant area and that communications, or educating the public, was of primary importance throughout the case.

The issue is also unique in that scientists played a major role, banding together with naturalists and others into an environmental coalition that in the end proved to be more influential than timber and recreation interests. They used scientific and economic studies as the basis for their arguments. Emotional arguments played little or no part in this issue.

During the course of the issue, the environmentalists never claimed that the Beidlers were exploiting the land or managing it poorly. On the contrary, there was agreement that the Beidlers had practiced sound forestry management and that they should not suffer financially if they lost their lands. In effect, it was recognized that this virgin timber and unique environment exist in this day and age

because a private landholder believed that forests should be preserved as a valuable national resource.

Analysis of the Variables

The primary variables in the case are: (1) environmental factors, (2) resource management, (3) value system, and (4) interest groups and their communications.

Secondary variables are: (1) taxation and law, (2) economic system, (3) land tenure, and (4) transportation system.

There are no negligible variables.

Environmental factors, the first primary variable, is the basis for the issue. The swamp is a unique environment and when that environment was threatened, the issue began. Resource management is the next primary variable. The change in management goals for the area from preservation to timber production was the issue. This variable must be considered with the third primary variable, value system. The Beidler family's and timber industry's utilitarian values, while not exploitive, were in conflict with the value systems of scientists and naturalists (who wanted to preserve the area for its biological values) and the value systems of recreationists (who wanted to preserve it for aesthetic and wildlife values). All three value systems were tied to three different resource management goals and practices. The Beidlers and timber interests advocated harvesting by both

selective cutting and clearcutting over an extended period. The scientists and naturalists advocated preservation and the creation of a National Monument to accomplish this, while the hunters and recreationists wanted a National Preserve so they could use the swamp on a less restricted basis for their activities.

These interest groups and their communications made the issue a national, rather than a local one. The environmental coalition organized and promoted a campaign that converted little local and no state support for the proposal into unanimous support in a period of only 2 or 3 years. The forestry interests--the only other major interest group in the case--were not able to generate enough support to counteract the environmentalists.

While taxation and law and economics were presented as important factors, they were secondary in importance. While both variables played a part in the Beidlers' decision to cut the tract, pro-preservationists pointed out that the costs of preservation were not prohibitive; the timber interests would not be drastically affected; and the Beidlers would be adequately reimbursed.

Land tenure was another secondary variable, and an interesting one, as the Hunt Club's leased rights to the land affected the issue from its inception to the present; as did the government's taking of the Beidlers' Santee Swamp

lands.

Transportation was also a secondary variable in the case. Because of the swamp's availability to major population centers, the Park Service could justify its inclusion in the National Park System as a National Monument. As the east does not have many wild areas, this was an argument for the swamp's preservation.

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MT. STORM

This case concerns the forest services of commercial development and wood. The wood in this case is whole trees--Christmas trees. The location is western Maryland and northern West Virginia and the time is the early '70s. The protagonists in the issue are tree growers in Maryland, the Virginia Electric and Power Company (VEPCO) across the border in West Virginia, and the two states.

The Region

The region is the extreme western tip of Maryland, isolated from the rest of the state and surrounded on three sides by West Virginia and Pennsylvania. The place in particular is Garrett County, Maryland and the West Virginia town of Mt. Storm, located directly across the Potomac River. The area is rural and sparsely populated; economically depressed; hilly and forested; and produces both trees and coal. The case illustrates the conflict between the energy needs of the nation and the environmental costs of natural resource extraction.

The Issue

.stc 'The Issue' sp=1 in=3 VEPCO operates a 1.1 million-kilowatt generating plant in this area. Located in Mt. Storm, West Virginia (population 200), it uses 10,000 tons of locally-mined Appalachian coal per day to produce

electricity for its customers in Virginia 150 miles away. To reduce transportation costs, generating plants are increasingly being located near their sources of raw materials. An additional factor in these mine-mouth operations is that by locating in remote areas the air pollution effects of such plants may be reduced.

However, rural areas are becoming more protective of their resources--including clean air, and in this case air pollution was the cause of the issue. Across the border in Garrett County, Maryland is a substantial Christmas tree industry, established on worn-out farms and abandoned strip mines.¹ There are over one million Christmas trees grown here.² Soon after the plant began operating in 1966 the tree growers noticed that their trees were discoloring--turning brown or orange--and growing erratically. Growers said that they could not sell many of the trees, and those they did sell had to be painted green. They believed that pollution from the plant was causing the damage and asked the company whether it could do something to alleviate the problem. The company, however, denied the allegations.

In 1969, as the situation grew worse, Maryland state officials asked the federal government to investigate. After an inquiry, federal scientists concluded that sulfur dioxide from the Mt. Storm plant was causing the damage. The governor of Maryland then asked the federal government

to convene an air pollution abatement conference so that representatives of both states could attempt to resolve the problem.³ Such conferences are held when the governor of one state alleges that residents of his state are being damaged by pollution originating in another state.⁴ The governor of West Virginia responded that if a conference were called, it should also consider the air pollution caused by a Westvaco Paper Company plant, also on the West Virginia/Maryland border about 18 miles north of Mt. Storm, but located in Maryland and causing air pollution in West Virginia.¹ This was agreed to.²

The hearings were held by the Environmental Protection Agency in May, 1971. Testimony was heard from the two groups--the tree growers and VEPCO officials. The growers told their stories. One said that he had first noticed erratic growth and other damage in 1968 when he had expected to sell 20,000 trees. However, only 5,000 were saleable and many were of low quality. By 1970 he had only 3,000 saleable trees and all had to be sold as seconds because of their poor quality.

On another farm the quality of the trees had deteriorated so much that wholesale prices of \$3.17 in 1965 had dropped to \$1 in 1970. The owner testified that it was such a financial disaster that the farm had to lay off its five full-time and three part-time workers, and had to sell

part of the farm to VEPCO to meet expenses.¹ One owner said that after consulting experts, air pollution had been identified as the cause of his tree damage, with the extent of damage inversely correlated with distance from the plant. "Two miles from the station...nearly 100 percent of the trees are unsaleable."²

Company witnesses repeatedly denied that fumes from the plant were causing the damage. The company had funded a research study by a professor of plant pathology at Pennsylvania State University who testified that his studies showed that a mite was causing the problem. In response, a federal official quoted from one of the professor's 1968 publications that warned of damage to vegetation from sulfur dioxide emissions from the increasing number of power plants being built in rural areas. The professor answered that at that time "I was on a sulfur dioxide kick." A federal consultant, however, testified that the plant was emitting 17 tons of sulfur dioxide from its stack every hour and that this unquestionably was damaging the vegetation in the area.²

Company officials also testified that VEPCO had already installed \$75 million worth of air pollution control devices at Mt. Storm, and while they had not worked well to date, the company would invest another \$13 million to find devices that would work. A company public relations man said, "This

Christmas tree problem is an uphill fight all the way for VEPCO. We stand accused of sabotaging Santa Claus."¹

West Virginia and Maryland state officials also took issue with each other. While both states agreed that there was an air pollution problem causing unpleasant odors in the area, West Virginia officials claimed that it was caused by the Westvaco paper mill, while Maryland officials blamed Mt. Storm.² When the West Virginia Air Pollution Control Commission representative said that the Westvaco plant in Maryland was a part of the problem, the chief of Maryland's Division of Air Quality Control responded that the paper mill was already under tough state regulation that was forcing it to clean up on a proscribed schedule that would allow the plant to meet state standards by 1975 or 1976. He said that West Virginia had no such restriction on Mt. Storm plant emissions. When the VEPCO representative stated that because of its isolation and the absence of other polluters the air quality in the Mt. Storm area was above federal standards, the Maryland representative said that just made it clear that federal standards were inadequate.

West Virginia citizens were divided on the issue. Many believed that the plant was an economic benefit to the area that exceeded environmental costs. One resident said that the plant had provided work for miners and raised property values. "Before they came in you could buy a whole farm for

\$1,000 at \$15 to \$25 an acre. Now an acre goes for \$1,000. Look at Pittsburgh. That city would have been nothing if they had cracked down too hard on industry in the beginning."¹

Others opposed the facility. Citizens at the hearing complained about flyash fallout from the VEPCO plant. The owner of a campground near Mt. Storm described the fallout: "The flyash sweeps across the lake like a fog moving in and when you have a campground full of strangers from all over the U.S. it is utterly frustrating. We have had people leave by the dozens when their eyes are filled with flyash and their teeth grit together. You can even smell it and taste it."²

Residents said that the dirt it generated turned clothes black; apples were covered with a greasy film impossible to wash off; potatoes grew only as big as marbles; and the fumes were a respiratory irritant so that many people had to stay inside. One woman said, "I was so mad when they came in. I wished they'd built the plant in some foreign country." Another said, "I think it's strange that Maryland is concerned enough to put the value of its Christmas trees higher than West Virginia values the health of its citizens."¹

In October 1971 the Environmental Protection Agency issued an order based on their analysis of the hearing. It

ordered VEPCO to cut sulfur oxide emissions by March 1, 1972 and to reduce particulate emissions by January 1, 1973. It also ordered Westvaco to bring emissions of both into compliance with Maryland and West Virginia air pollution control standards by January 1, 1973. EPA stated that the Christmas tree damage was caused by air pollution and notified both states that they should take further action with regard to air quality in their states. Their recommendations were that:

- 1) West Virginia establish a compliance schedule that will assure that a new VEPCO power plant unit, when combined with other air pollution sources in the area, will not result in air quality below national standards.
- 2) Westvaco officials submit to Maryland within six months a plan to minimize odorous sulfur emissions from the mill.
- 3) Both states crack down on other local sources of particulate pollution, and within six months prohibit the transport of fly ash and granular coal in uncovered vehicles.
- 4) Both states conduct research on the source of photochemical oxidants found in the area, and determine how reductions in emission from the VEPCO plant affect the presently abnormal growth of cone-

bearing trees in the area.

The states had six months to act on the recommendations. If this was not done, EPA could enforce compliance through the courts.*

In October, three Christmas tree growers and five landowners from Garrett County filed suit in the Federal District Court for damages against VEPCO. They claimed that Mt. Storm air pollution had ruined their Christmas tree plantations. VEPCO settled out of court, agreeing to pay the plaintiffs \$450,000, but not accepting responsibility for the damage. The plaintiffs' lawyer claimed that this represented only about one-fourth of the actual damage to approximately one-half million trees on his clients' farms, but it would enable them to pursue other suits against Westvaco and two other electric generating plants located in the area. The suits charged that trees were damaged by sulfur dioxide and flyash emissions that result from burning low-grade, high sulfur coal.

The expert witness for the plaintiffs, a plant pathologist and director of environmental studies at the University of Montana said, "It's a very cheap way out for the utility. It might cost VEPCO \$30 million or more to install effective pollution abatement equipment on their stacks at Mt. Storm. Beside that, \$450,000 doesn't look like much" He was pessimistic about the future of tree

farming in the eastern U.S., noting that the Scotch, white and Virginia pines have been damaged the most by air pollution, and that it was a classic case of "acid rain" damage. "The tremendous increase in the number of coal-burning utility plants in the East is a threat to the entire region. If it continues, I don't see how Christmas tree plantations can exist east of the Rockies."⁵

The \$450,000 settlement is one of the largest ever paid for environmental damage in the region; however, large awards for crop damage caused by air pollution have been won in the far west and Florida. These suits for the most part have been against electric utilities and metal smelting companies.⁵

It may be that as rural landowners take to the courts to obtain reimbursement for environmental damage to their lands, commercial development interests may find that plant construction and operation in sparsely populated areas requires the same amount of environmental cost considerations as those located in more densely populated regions.

Summary

This case was an old-fashioned border dispute between two states. But in this instance, air rights, rather than land rights, were the cause of the conflict. Environmental damage from air pollution is beginning to be recognized in rural areas as well as the more populous areas of the

country. Acid rain in particular is damaging not only the Christmas trees in Maryland, but fish in the Adirondack lakes. While in this land dispute the damage could be traced to its source, in other cases that may not be possible. If the nation builds or converts to more coal-fired plants, this type of land-use issue may be more common, particularly in remote areas near the raw material source--coal.

Analysis of the Variables

The primary variables in this issue are (1) environmental factors (2) economic system, (3) interest groups and their communications and (4) taxation and law.

The secondary variable is (1) value system.

Negligible variables are (1) land tenure, (2) resource management, and (3) transportation system.

Environmental factors is the first primary variable and was the reason for the issue. This particular form of environmental damage, discolored and deformed trees, was easily identifiable and its cause could be traced. Although the coal-fired plant had been located in a remote area where normally there would be little opposition to it, this plant drastically affected the economy of a county.

The second primary variable then is economic system. Garrett County in Maryland is a Christmas tree county and its pines are particularly susceptible to air pollution

damage. As these trees are grown for aesthetic values rather than for utilitarian ones, their appearance is vitally important. The pollution that damaged them could be given a specific cost. The air pollution in effect was destroying an industry, and as there are few industries in this region, it drastically affected the economy.

The third primary variable is interest groups and their communications. The tree growers initiated the issue, protesting first to the company and then to their state officials. It then became an interstate issue, with each state charging the other with negligence. In addition to the growers and various state officials, local citizens protesting other conditions resulting from the pollution formed a third group.

This brings in the last primary variable, taxation and law. Under the Clean Air Act, the Environmental Protection Agency has the authority to require compliance with federal air quality standards. In this case, state requirements varied so that an interstate issue resulted.

The only secondary variable is value system. This enters the case because citizens protested that the Mt. Storm plant had damaged their environment so that their way of life was altered.

References

¹New York Times. 5-14-71.

²Washington Post. 5-17-71.

³New York Times. 1-25-71.

⁴Washington Post. 10-28-71.

⁵Washington Post. 10-6-71.

REDWOOD NATIONAL PARK EXPANSION

This land-use conflict covers approximately 10 years. It began in 1968, when the Redwood National Park was established on the northern coast of California, and could be considered an extension of the issues that led to the creation of the park.

The place is the two-county area encompassing the park; Del Norte in the north and Humboldt in the south. The main conflict, however, is focussed in the Redwood Creek Basin and the logging towns of Orick, Arcata and Eureka.

The protagonists are three lumber companies, loggers, environmental groups, and the state and federal governments. The forest services at issue are two: wood and aesthetic values.

The Community

The Park

Scattered in isolated parcels along Highway 101 down the northern coast of California from Crescent City near the Oregon border to Orick, 39 miles farther south, lies the most expensive national park in the United States. It is the Redwood National Park, created by Congress in 1968 to preserve some of the most magnificent trees in the country. The park itself is a paradox. It cost more than any other national park, yet it is one of the least-visited.

While it was created to preserve the redwoods, its very boundaries make probable the destruction of some of its most valuable trees. It is not even a true national park, including as it does three state parks. The majority of its lands are state-owned.

The critical area of the park, whose boundaries are the subject of the conflict described here, is known as "the worm". It extends from the town of Orick along Redwood Creek approximately eight miles in a winding band about one-fourth mile wide on each side of the channel. In this narrow band are some of the tallest trees in the world. The world's tallest tree is there--367.8 feet high; as tall as a thirty-story building; 586 years old and growing. The world's second and third tallest trees are also here. All three are in the "Tall Trees Grove", located in an oxbow bend of the creek.

The land

Redwood Creek has a further distinction: It carries more sediment per unit volume than any other river or stream in the country. Logging for many decades on the steep, unstable slopes above the creek has caused serious erosion, and the resulting sediment has been deposited in the creek and under the redwood trees on the flats. The creek's average flow is 1,112 cubic feet per second (cfs). However, during floods it has been measured at 50,000 cfs at Orick.

By comparison, the wildest whitewater in the lower 48 states--the Colorado River--flows at 15,000 cfs in a channel not much wider than lower Redwood Creek. The combination of heavy sediment load and fast-moving water poses a serious threat during flood conditions to the redwood trees growing along the creek banks.

The low mountains along the northern coast of California are laced with rivers and creeks running through their valleys and gorges. The climate is mild and wet, the region receiving from 80 to 100 inches of rain per year, almost all of it between October and May. The summers are dry, but during these months the fogs along the coast provide moisture and coolness in the mornings and evenings.

When the southerly storm fronts move in from the Pacific it may rain for days or weeks at a time and cause devastating floods. There have been three major floods in the Redwood Creek Basin during the past 26 years, and these, to a large degree, have been responsible for the widening of the creek and the deposition of millions of tons of sediment in the creek and under the trees on the flats.¹

The tree

The coast redwood is in the Sequoia group of the Redwood family (Taxodiaceae). This group is ancient and flourished during the Cretaceous and Tertiary geologic periods, dating from the time Australia separated from

Antarctica. During the mild, humid climate of the Miocene age--about the time the Colorado River began to cut the Grand Canyon--the Redwood family formed extensive forests throughout the world. The only two American genera remaining of this family are *Taxodium* and *Sequoia*, and the only two species of *Sequoia* are found in small areas of California and southwestern Oregon. These two species--*Sequoia sempervirens* (redwood) and *Sequoia gigantea* (giant sequoia) are sometimes confused. The redwood's range is along the northern coast of California, barely extending into Oregon, while the giant sequoia is found only in central California.

The redwood is a massive tree commonly 200 to 275 feet high with diameters of 8 to 12 feet. It has a relatively shallow, wide-spreading root system, making it vulnerable to erosion and compaction as well as soil moisture variations and windthrow. It is also susceptible to fire damage when young, before it has formed its mature, thick, fire-resistant bark. Its trunk is tall and clear with a short crown. It is a very valuable timber tree as its wood is weather-resistant and the volume of wood per tree is enormous. One measured tree furnished 480,000 board feet (mbf) of prime timber.^{2,3}

This is the redwood's problem. It is a superior timber tree, and timber interests have much to lose if it is

preserved. The giant sequoia, on the other hand, is not a good tree for timber production as its wood is exceedingly brittle, and it has been preserved in many places without opposition.

The redwood's range is very limited. It inhabits the coastal areas along the "fog belt"--a narrow strip of coast about 450 miles in length and from 20 to 40 miles in width. The redwood depends upon this morning and evening fog to mitigate the dry summer heat and ensure its survival. It prefers alluvial bottoms where it reaches its maximum growth--as in the Tall Trees Grove. It has good reproductive capacities as it is a stump sprouter and these sprouts may reach merchantable size in 50 years. However, although it is a prolific annual seeder, germination may be as little as 10 percent because it prefers fresh mineral soils. The redwood is the dominant species in this area and redwoods commonly make up 80 percent or more of the forests. The largest stands of timber in the world are found here, with mature stands averaging 125 to 150 mbf per acre. On the better sites such as the river flats, yields are as high as 1 million board feet of scaled logs per acre.

The redwood has other desirable characteristics. Its rate of growth in both height and diameter exceeds most American timber species, and research in its second growth forests indicates that no other species, except possibly the

eastern cottonwood, can produce as much wood in the same period of time. It is also very tolerant, and suppressed trees quickly respond to release. Redwoods thus form all-aged forests, in contrast with other western species. The redwood is extremely long-lived; some trees are over 2,200 years old.²

Logging

Most of the land in the Redwood Creek Basin and all of the land upslope from "the worm" is owned by three companies: Louisiana Pacific, Simpson, and Arcata Redwood. These companies all harvest redwoods by clearcutting. The only major company in the area that does not use this harvesting technique is the Pacific Lumber Company, based in Scotia and locally owned. It is also the only major company that does not have extensive forest lands elsewhere or a diversified industrial base. For 100 years it has been solely dependent upon its redwood forests and practices only selective cutting.

California's tax law has been the major reason for clearcutting redwoods. Until January 1, 1977 when a yield tax was instituted, California had an ad valorem tax on timber lands. Under this tax structure, a private timber owner in many cases could not afford to leave trees standing on his property. In 1926, to alleviate the problem, the California timber lobby managed to have an amendment to the

constitution approved: "Timbered areas from which 70 percent of the original merchantable timber...has been removed shall be exempt from taxation for a period of at least 40 years and until it has been declared 'mature' by a timber maturity board." The large companies could afford to leave 30 percent of their timberlands uncut to appreciate in value while they were tax-free because they had reserves to cut elsewhere. Small owners with no reserves could not afford this. Neither could they afford to selectively cut and pay taxes on their remaining timber. In most cases they had to sell their lands, and the result is that most of the remaining redwood forests today are owned by a few large companies.¹

These four factors--the established boundaries of the park, the geological characteristics of the land, the physical characteristics of the redwood itself, and the harvesting technique of clearcutting--combined to bring about the "crisis" as many people perceived it.

The Issue

Background

In 1964 the National Park Service published the results of a survey of the redwood region, which found that of the original two million-acre redwood forests in the nation, only about 300,000 acres, or 15 percent remained, including those in state parks. It was estimated that if logging

continued at its present rate almost all the old-growth redwoods would be gone by 1984-94. While 27,468 acres of virgin timber were protected in state parks, this was only two and one-half percent of the total remaining acreage. The only redwoods protected by the federal government were in a 500-acre tract called the John Muir Woods, offered as a gift to the government.

Environmental groups, principally the Sierra Club and the Save the Redwoods League, which has been purchasing redwood groves since 1918, began lobbying to have a national park created to preserve the redwoods while expanding existing state parks. Opposition from California was intense--from Governor Reagan, whose famous quote (or misquote) was widely circulated: "If you've seen one tree you've seen 'em all"--to the timber lobby in Washington, D.C., who called the redwoods advocates "posie pickers who come into the woods from the city once a year".

Both President and Mrs. Johnson lobbied for the park and it was finally dedicated in November 1968, with greatly reduced acreage--from a proposed 80,000 acres to 58,000; 30,000 of these in California state parks. Only about 11,000 acres of the acquisition were old growth; the remainder were second-growth or newly cutover lands. The old-growth were prime timber lands to be acquired from Arcata, Simpson, and Louisiana Pacific. At this time the

Save the Redwoods League was paying as much as \$10,000 per acre for old-growth. The three companies received \$170 million for their lands, with another \$100 million in claims outstanding, and an additional 10,000 acres of timberland from federal reserve lands that had 60 percent of the volume of old-growth of the privately-owned lands ceded to the park.

Since compromise had been necessary, the park boundaries set were those that were economically and politically feasible. The problem was that ecologically they were unrealistic and indicated "the folly of trying to impose man's limits on a natural system".⁴ The steep, unstable slopes above "the worm" on Redwood Creek were not included in the park and logging could be--and was--carried on right up to park boundaries. Clearcutting on these fragile soils seriously increased the rate of hillside erosion, caused Redwood Creek to rise from 5 to 13 feet, widened the channel, and increased the potential for extensive damage to the shallow-rooted redwoods on the flats. On nearby Bull Creek, where logging was much heavier than on Redwood Creek, a flood in 1955 had caused the loss of 600 virgin redwoods.¹ The Tall Trees Grove is particularly vulnerable.

As concern for the region grew and publicity was generated by various environmental groups, the State Water

Resources Control Board, after investigating reports of logging abuses, put logging operations in the area under stringent regulation.

However, environmentalists and resource professionals worried about old harvested areas where regeneration was very poor. Erosion was continuing in these areas and they were not being rehabilitated. There was also the question of aesthetic values. Few people felt that the perpetual sounds of chainsaws were conducive to appreciating the serenity of the redwood groves. They believed that there was "visual blight" as well. Harvesting was taking place right up to the boundaries of the park, and pictures of naked, scarred slopes next to old-growth redwood groves were publicized from coast to coast.

Environmental groups pressured the Secretary of the Interior to do something--pointing out that he had been authorized by the enabling legislation of the park to protect its boundaries. He declared that his duty was "discretionary" and for seven years federal studies were conducted to determine whether, in fact, there was a problem.⁵ The Stone Report--the first report on the park's condition--was published in 1969. Then came the Preliminary Draft Master Plan for Redwood National Park in 1971; the National Park Service Proposal for Redwood National Park, 1971; the Earth Satellite Report, 1972; the Curry Task Force

Report, 1973; and the United States Geological Survey, 1975. All confirmed that erosion was occurring and it would, could or might be a threat to the Tall Trees Grove.¹

1973

Environmental advocates decided that their only recourse was in the courts, and the California Attorney General's office as well as the National Resources Defense Council filed a complaint against the three companies in June 1973, charging that their continued logging around the park's periphery constituted a public nuisance. When the California Forest Practices Act, the toughest forestry regulatory legislation in the country, was passed in the fall of 1973 the NRDC complaint was amended to state that this legislation required an Environmental Impact Report (EIR) for all significant logging operations on private lands. The Sierra Club also filed suit in 1973 against the Department of the Interior, claiming that it had legal responsibilities to protect the park and was ignoring them.

1975

In 1975 the decisions were made public. The California Supreme Court found that an EIR would be required for all logging plans around the Redwood National Park. Six months later the U.S. District Court found that the Interior Department had "unreasonably, arbitrarily, and in abuse of discretion" failed to protect the park as required by

federal law.¹

Both logging and environmental interests blamed not only the Department of the Interior, but Congress as well. The California Secretary for Resources stated, "Congress perpetrated a fraud on the American people in creating the boundaries of the national park and then never proceeding to fund the proposal to protect it."⁶ This view was shared by Representative Leo Ryan of California who also blamed the Administration for its lack of support for the park.

1976

The summer of 1976 brought matters to a head, as the three timber companies presented plans for prospective harvesting in the Redwood Creek Basin. Fifteen new clearcuts were proposed for that summer in the Basin alone, and each proposal brought additional pressure to bear on the state and federal governments to do something. After extensive hearings, California granted permission for cutting under strict supervision near "the worm". The lumbermen maintained that current demand was such that they had to harvest their stands if the government wasn't going to purchase them. They claimed that the danger from erosion was caused more by nature than by man, that timber harvests were carefully planned, that modern culverts and drainage ditches would prevent erosion, and furthermore that the redwoods had exceptional regeneration powers and would grow

back in 40 to 60 years. The president of Arcata said, "It is unfair to ask us to take valuable timber land out of production without compensation or a clear indication that Congress will buy the land."

These statements fell on many deaf ears, arguments grew even more heated, and threats were made against the lives of lumber company executives and state officials if the tallest trees were destroyed.⁶ As the controversy continued there seemed little hope of a compromise, much less the voluntary halt to cutting requested by various groups.

During the summer Representative Philip Burton of California proposed a bill in the House to expand the park to provide a buffer zone for its boundaries. It was a compromise--proposing acquisition of 74,000 acres rather than the 90,000 acres environmental groups wanted and including only 10 percent of the Redwood Creek Basin, the area of greatest conflict.⁷

In the fall, elections brought President Carter into power and environmentalists believed that the federal government would now take an active role in expanding the park. During the campaign Carter had criticized the Ford Administration's "insensitivity" to the redwood problem and said, "A Carter Administration will end this insensitivity. I will call on the timber companies to initiate a one-year voluntary moratorium on further cutting the sensitive areas

outside the park."* This was not done.

Continued cutting on the lands proposed for acquisition and the lack of federal action aggravated the situation. Pro-park advocates criticized not only the timber companies but the federal government as well. The National Park Service was questioned about their management of the park. Expansion advocates charged that after nine years the Park Service had not published a development plan. They said that there was not even a sign to indicate where the park was located on its only access road. The Park Service responded that it had never received either the funds or the manpower from Congress to protect the park.

Visitors to the park protested as well. A visitor's log on "the worm's" streamwide trail was filled with expletives against the timber companies. "the worm" had been created to give visitors an access corridor to the Tall Trees Grove, among others along the creek. The intention was to provide a path through the cool, rich alluvial flats in a cathedral-like setting. By this time, however, the only day when a visitor could appreciate the solitude and quiet was Sunday, when the chainsaws weren't operating.

Environmentalists protested that the companies had moved in quickly to cut before the government could buy the lands, charging that they would then benefit from the sale of the timber without significantly diminishing the

potential price of their acreages. They pointed out that from 1968 to 1977 old-growth stands in the Basin had dropped from 32,000 acres to less than 12,000.*

The companies responded to these charges at dozens of hearings conducted by a half-dozen agencies. They stated that 183,000 acres of redwoods were already preserved and that the Redwood Creek Basin was probably the most regulated logging region in the country. Arcata said that one of its timber harvest plans near the park had been inspected 31 times by federal, state and local officials before it had been approved, "Yet even after approval, the environmental unit of the Attorney General's office insisted on further inspections." The company stated that it was a question of survival for them, as they had lost 60 percent of their old-growth stands through creation of the park and were forced to move into these properties as their only alternative left if they were to continue in redwood production. If the expansion was approved, Arcata thought that it might be forced out of business. Their president said, "We would have almost all our old-growth stands taken from us. I don't see how we could continue to function." However, Arcata would be reimbursed at the current market value of \$25,000 per acre for old-growth, and redwoods make up only a portion of Arcata's investments.*

But the main factor in the park expansion proposal was

not environmental considerations or concern for lumber company profits. It was the question of jobs. The north coast of California was already a depressed area with unemployment in the two counties averaging about 12 percent since 1970. In a report commissioned by California's resource agency, Berkeley forestry professor Wm. McKillop estimated that 2,230 jobs in the north coast region would be lost if the park were expanded. There was no provision in the Burton bill for providing employment for displaced workers. The California Resources Secretary said, "It's a real temptation to jump in, save the trees and let the other problems solve themselves. Well, that ain't gonna work."

Environmentalists claimed that jobs would be created by the growth in tourism, and pointed out that the lumber industry in the region had been declining for years anyway. A report by the city of Eureka backed up this claim, stating that timber employment had been declining for more than 15 years due to increased mechanization. The report predicted that it would continue to decline while tourism in the area would increase.

1977

Another source of contention was the cost of the park. By 1977 the government had spent \$170 million to acquire 28,000 acres. Cost estimates of expansion ranged from a Park Service figure of \$600 million for the 74,000-acre

Burton plan to a Sierra Club estimate of \$150-200 million. This controversy over price reflected the discrepancy in the estimates of old-growth redwood acreage that would be acquired. The Park Service estimated 12,000 acres; the Sierra Club 7-8,000; and the California Parks and Recreation Department 8-10,000.

The main flaw in the argument for expansion was conceded by its advocates. It is the Redwood Park itself. One of the reasons for expansion was to protect the park from the effects of erosion from logging. But the California Resources Department stated that 80-90 percent of the erosion problem came from other areas far upstream. The creek was already full of sediment and to correct this would require dredging or the construction of rip-rap along the banks--both undesirable options. While the Burton bill directed the Secretary of the Interior to negotiate with California for treatment of the disturbed lands, this would be very expensive and California would have to pay 10 percent of the cost. No one claimed that park expansion would ensure protection of the tall trees.*

In March 1977 Rep. Burton asked the three companies for a six-month halt to cutting in areas proposed for inclusion in the park. They rejected his proposal. The Los Angeles Times acknowledged that the moratorium would restrict lawful economic activity, exchanging jobs that sustained the area

for aesthetic and environmental benefits. Nevertheless, it advocated such a halt because it believed that the moratorium might generate enough pressure to make Congress move.⁹ Everyone concerned wanted something done; California officials went to D.C. to lobby for Congressional action.⁸

At the same time, the State Department of Forestry announced that plans for harvesting 503 acres in the Redwood Creek area were approved and that there were harvesting plans pending for 670 more acres. These included some of the most valuable old-growth outside the park. The Secretary of the Interior on March 29 asked the companies for a six-month moratorium on cutting to give Congress time to enact legislation. The proposition was rejected, the companies saying that they needed the timber to keep the mills operation. Arcata explained that if they agreed to postpone cutting that would just encourage expansion and in turn put them out of business. Three days later, on April 1, 1977 Arcata began cutting on a 56-acre parcel near "the worm" on proposed park lands. The plan had been approved by the California Department of Forestry in October 1976. At that time the Save the Redwoods League had offered to buy the lands for \$1 million. Arcata rejected the proposal, but had agreed to postpone cutting till April 1 to give Congress time to act. Congress didn't act and Arcata cut.¹⁰

This became the catalyst for action. On April 8 the

Forestry Department rejected a plan for cutting old-growth redwoods in the area. Department officials said it was the first submitted since the Administration had asked for a moratorium. The plan had been rejected because "this plan, if logged, would impact upon aesthetic enjoyment of Redwood National Park and recreational opportunities alike in this and future generations". The Department said that the action was taken under the Forest Practices Act (in effect since 1973), which provided that the Department consider "recreational and aesthetic effects of timber harvesting". The plan included only 18 acres but was considered an ultimatum by both sides.

Meanwhile the cutting by Arcata on the 56-acre tract continued. The Justice Department said that it would not seek an injunction to halt the cutting as the Department had reached an agreement with the three companies by which they agreed to permit the National Park Service to oversee what the firms called "self-imposed restrictive harvesting practices".¹¹

On April 14, 1977 Rep. Burton held the second public hearing on the plan at Eureka (the first was held in D.C.). A crowd of 2,500 booed him while logging trucks honked their horns outside. The entire Eureka police force, worried that violence might break out, guarded Burton and a small group of environmentalists in the audience, but comments were

bitter rather than violent. The Eureka Assemblyman summed up the crowd's feelings: "Maybe we are a sparsely populated area, but we are not a conquered province. And the government has no business confiscating our sole natural resource."

Repeatedly witnesses expressed fears of job losses, citing an unemployment figure of 13.8 percent for Humboldt County. The county tax collector's office predicted that expansion would cut heavily into county taxes with timber and land included in the plan currently valued at \$113.7 million. Burton assured them that government programs would make up the difference so that the county would suffer no net loss of revenue. He said that he had visited land in the area which had been logged many years ago and there was little or no regrowth. "Some of it quite literally had no trees on it." The land itself looked like "the surface of the moon".¹²

The third hearing was held the next day in San Francisco. This time a 100-vehicle truck convoy carrying hundreds of loggers and their families drove 270 miles to express their opposition. Republican Congressman Clausen of their district expressed his complete support for their views--saying that the plan would cost \$1.7 billion in land acquisition costs and lost wages and that "I'm not here to protect the companies...they're going to be paid off. My

job is to protect jobs." Burton assured him that the government was determined that the people working in the industry would not suffer.

Meanwhile, local citizens expressed other opinions regarding expansion. They wondered why the government was expanding an underused park and said that when land is preserved for the public it only results in its destruction, with the result being filth, vandalism, wanton destruction and complete disregard for anything beautiful. "The public has come to feel it owns every acre in and out of sight, yet it is the most destructive and irresponsible force afoot in the land."¹³

Finally, the Administration acted. On April 19 Secretary of the Interior Cecil Andrus proposed that Congress expand the Redwood National Park by 48,000 acres on the park's periphery. Only 10,000 acres of those designated for acquisition were old-growth; the rest were natural prairie, scrubwood and new-growth lands. He asked Congress to vote for "immediate taking" at a cost of \$359 million--all from existing budgetary authority. In addition, a study group would be formed to develop a plan to assist loggers who would lose their jobs. The Interior Department estimated that approximately 1,000 jobs would be lost. The government stated that it had no plans to issue an injunction to halt cutting before Congress acted, even

though it was felt that there would be some damaging cutting that year in the expansion area.

Andrus made the point that although the Administration would use every existing law to ease the impact of job losses, existing old-growth would probably be exhausted in 10 to 15 years at current harvesting rates and then both jobs and trees would be gone anyway.¹⁴

Reactions to the proposed bill from the affected area: Rep. Clausen--"We're not going to be snookered by high-sounding promises from Washington bureaucrats. The jobs question is the key concern of everyone in Humboldt and Del Norte Counties."; Arcata--"an outrageous land grab".¹⁵ The Association of California Loggers announced plans to drive a caravan of logging trucks to D.C. and said, "We want legislation declaring the logger an endangered species." They also commented on the government's proposal to include \$40 million for job training and unemployment benefits saying, "These people don't want to be retrained to sweep streets."¹⁶ A Los Angeles Times editorial echoed this sentiment: "Loggers who face job losses through park expansion are not interested in retraining or other employment assistance. For them, the threat to their jobs represents a threat to a way of life that they feel cannot be replaced by work that caters to the tourist industry."¹⁷

California politics entered the picture as well. In

May the State Board of Forestry approved a partial moratorium on logging around the park and denied approval to Arcata and Louisiana Pacific to log in three areas of the Basin for 180 days. The companies appealed the decision. The Board said that in April the State Attorney General had declared their action legal. Now, in May, the Attorney General stated that the Department did not have the authority to deny a permit solely on grounds that there was legislation pending in Congress. There appeared to be disagreement in the Attorney General's office, as a draft legal opinion supporting denial of the harvest plans had been vetoed by the Attorney General after a meeting with representatives of the timber industry. When the Board upheld the decision, noting that 12 other harvest plans in less significant areas of the Basin had been approved, industry said that it would take the appeal to the courts.¹⁸

The battle continued between the companies and the federal government as well. On May 21 it was announced that the Department of the Interior planned to seize a parcel of land in the Basin before it could be cut. The area was included in expansion plans, but Arcata had already obtained permits to begin harvesting. One-third of the parcel was old-growth, the rest maturing second growth. It reached from the Pacific Ocean to the first major ridge of mountains, and if logged, the cuts would be visible from the

highway. The Department planned to employ the condemnation powers granted it under the original park legislation. This included the authority "to acquire...lands and interest in lands...to maintain or to restore a screen of trees between the highway and the land behind the screen".

The total value of the land was \$1.6 to \$2 million. The Save the Redwoods League offered to pay \$1 million, with the Department making up the balance. However, there was concern that Arcata would begin cutting immediately, as they were authorized to begin in April. On Wednesday, June 1, they cut. The old-growth on this tract was from 1,200 to 1,500 years old and the company could fell one tree per hour. Time became important. Department of Interior lawyers had negotiated an agreement with Arcata lawyers for a weekend moratorium on cutting the grove. The agreement was rejected by Arcata executives on Friday, so on Saturday, June 4 the government deposited \$1 million from the League and initiated formal procedures to seize the 35 acres. Arcata called it "blackmail", "harassment" and a "land grab".^{19,20} The U.S. District Court approved the seizure but the decision was questioned by Arcata officials who said that the tract was not visible from the road. The judge stated that he would have to find that the Department had acted in a manner "arbitrary, capricious and without reasonable basis" to refuse condemnation and he could not do

this. The question of payment was not settled, however. Arcata said that they had appraised the parcel for \$3.25 million rather than \$1.6 million. Settlement would be determined in the courts and previously estimated costs most probably would be low.²¹

Meanwhile, back in Washington 23 logging trucks and 400 demonstrators from California pulled in, hauling an 18,000 pound redwood peanut as a gift for the Interior Department and banners reading "It may be peanuts to you but it's jobs to us." The Department said the gift was an "inappropriate use of redwood" and refused to accept it. The loggers then gave free redwood seedlings together with their opinions to each member of Congress. The three timber companies had offered to underwrite the trip with \$150,000 but the loggers themselves had raised \$120,000 to cover the cost of a chartered DC-10.²² When questioned by the loggers, both California senators said that they were not convinced that it would be necessary to acquire the full 48,000 acres, but they felt that some acreage would be needed to protect "the worm" and the world's tallest trees.²³

Secretary Andrus made a trip to California to talk to the companies and discuss trade-offs. He expressed concern over the exporting of unprocessed logs to Japan. The government's position was that the local job market would be improved by reducing exports. Increased harvesting in other

regions to offset the loss of timber was also a possibility, although Forest Service representatives said that on the Klamath, Trinity and Six Rivers National Forests--those proposed as possibilities by the companies--the allowable cut of 400 mbf was already being harvested and this is the highest yield that can be sustained indefinitely. (The companies wanted an additional 200 mbf.)^{24,25}

In addition the federal government conducted a \$150,000 task force study on the economic impacts of the proposal. It found that 611 forest products employees would be put out of work; however, if the government didn't compensate for losses, another 757 people in related industries could lose their jobs. Thus a total of 1,368, or three percent of the Humboldt County work force could be displaced. Under the Administration's proposal, \$40 million would be spent in alleviating job losses, while \$12 million more would be used to rehabilitate eroded areas around the park. This would provide 390-485 temporary jobs.²⁶

In Arcata, local businessmen were reluctant to discuss the issue. The town is both a logging town and a university town and the lumberjacks and university students were on opposite sides of the issue. Feelings were so high that the businessmen were concerned about blacklists. Local newspapers revealed that flyers had been posted in lumber mill lunchrooms near Arcata, urging loggers to boycott 35

businesses that had advertised in the monthly publication of the North Coast Environmental Center, an organization supporting expansion.

One businessman led a reporter out of his customers' hearing to talk privately (his customers were loggers). "This fight is stupid. The old trees--some of them 2,000 years old, imagine that, 2,000 years old--are going to give this area what, maybe five, maybe ten more years of economic benefits? This country is so rich, so productive that we can find places for the couple of hundred people who'd be out of work and it wouldn't hurt the national economy one bit."

Another, however, said that park expansion would mean ruining a lot of people's lives by downgrading their lifestyles. "He's got a good job (the logger), he likes it and he feels like a man. He probably never got past 6th or 7th grade and all he knows is what he learned by himself. But he's proud. Now you take his job away and he's going to start drinking and fighting with his wife and then he'll end up on welfare and because he's on welfare all his neighbors will look down on him."

A local real estate agent opposed to expansion considered it an aesthetic issue, saying, "Harvesting timber...is offensive to people who would like and probably have redwood timber in their houses. Seeing a logged area

is a shock to their system. But it is just as shocking to my system to fly to Los Angeles and see that gray air and to realize people actually live in that pollution. We are harvesting our renewable material. Those people are just polluting their environment."²⁷

The Los Angeles Times, which had expressed concern for the loggers throughout the conflict, published an editorial after a trip through the coast groves. The editor stated that he looked at the redwoods through the eyes of a conservationist: "Objects of reverence and beauty whose towering groves provide some of the intangibles that give quality and meaning to life; they must be spared from destruction." And then through the eyes of a logger: "A marketable resource that can be cut, milled and sculpted to provide jobs, incomes and thousands of products that protect and enhance like; like other resources they must serve the natural needs of mankind." The paper came down on the side of conservation, answering the major objections to park expansion: (1) the economic impact would be much less than anticipated; (2) the fact that some redwoods had been rescued did not mean that more should not be; and (3) the number of visitors to a park was irrelevant when compared to a commitment to protect more stands for all time.²⁸

The Burton bill had been revised to incorporate the Administration's proposal. It now included:

- 1) A 48,000-acre acquisition, with added lands to reroute U.S. 101 so that the existing highway could become a scenic highway (\$359 million appropriation).
- 2) Land rehabilitation upstream that would include reforestation and erosion work both on newly acquired lands and on lands outside the proposed new boundaries (\$12 million).
- 3) Job retraining and other employment-related benefits. Employees of the three companies who lost jobs would receive severance pay or income subsidies, voluntary job retraining and preferential hiring treatment by federal contractors. If employees had worked for a company more than 5 years they would qualify for up to six years' full salary benefits (\$40 million).
- 4) The Secretary of the Interior was given the power to impose tough logging standards outside the park if he felt California's logging rules failed to protect the park.

The Carpenter's Union, the AFL-CIO and the City of Eureka stated that they were completely opposed to the bill. A union spokesman said, "All the income maintenance in the world isn't going to take the place of jobs."²⁹

The pressure on Congress to take action was

intensified. Concern was expressed that if the bill was not passed that year (1977), 1,500 acres of redwoods in the expansion area could be lost. Only 10,000 acres of virgin redwoods were left; the rest was cutover land needed for protection of the trees on the flats. Harvesting operations were still being conducted under permits approved in 1976 and early 1977 by the California Department of Forestry. These could not be withdrawn, but the Department had been rejecting recent requests to harvest in acquisition area. State officials said, however, that if Congress didn't act in the next few months these permits could be reviewed and approved.³⁰ Meanwhile a Senate bill similar to the Burton bill in the House was introduced by California Senator Cranston.³¹

This bill reached a hearing before the Energy and Natural Resources Subcommittee of the Senate; there it was stopped. Labor leaders and local officials raised questions about job provisions. The government's responses did not satisfy the committee; it wanted further hearings on how displaced workers would be reemployed. The labor leaders stated that they believed that the three companies would close down their logging operations completely if the law was passed. This decision to hold more hearings meant that the bill was dead for 1977--stopped by labor interests.³²

Meanwhile costs were still an issue. In August a

General Accounting Office report on land costs for the initial park found that the major timber companies had received nearly \$100 million more than Congress had authorized for the park. The Court of Claims, traditionally more generous than the U.S. District Court, had valued the lands much above the government appraisal value.³³ In addition to these costs, California said that it expected money plus land from the federal government in return for jurisdiction over its 28,000 acres of state redwood parks. The Prairie Creek, Del Norte Coast and Jedediah Smith State Parks were to be turned over to the federal government under the initial enabling legislation for the park. California wanted \$448 million for reforesting 1.5 million acres in the state plus the transfer of federal lands near urban areas in exchange for the parks.

1978

To climax the years of fighting and deep-rooted hostilities, in January 1978, 18 giant redwoods were hacked and ripped by chainsaws 55 miles south of Eureka in a state park. Ten were killed and eight wounded. Each side blamed the other.

"I think it is understandable that loggers would get very emotional about this. I suspect the loggers of the vandalism. They have the equipment and they have the knowhow."--Sierra Club leader.

"The vandalism on state park trees is undoubtedly sponsored by the Sierra Club to build emotion back on a scene that is at present losing due to the cooperation of reasonable people. Don't go blaming and kicking the poor hard-working logger around anymore."--timber industry supporter.³⁴

Finally, on February 1, 1978, the Senate passed the Cranston bill, 74-20. There was bitter debate. The lumber companies won an agreement for a national feasibility study of increasing the timber harvests in the national forests, but lost in the fight to have the price for their land determined by the Court of Claims. It would be decided by the U.S. District Court. Senator Hayakawa of California said that support for the legislation stemmed from a "sort of crude Marxism", and an "anticorporate view". Arcata said: "This is the second time in 10 years now that the Senate has wreaked havoc on Humboldt County."³⁵

On February 10, the Burton bill passed the House, 328-6. All that remained was to reconcile the two bills, which differed only in their employment and rehabilitation provisions.³⁶

As the conflict finally drew to a close the issue of jobs was still being discussed. The mayor of Eureka said that no one understood--the north coast was dying from the burden of environmental legislation. "We're not

animals...We're people and this is still America. We have a right to our destiny." However, government studies indicated that the area would be depressed regardless of the outcome. The combination of mechanization and decreasing amounts of old-growth had caused both production and employment to drop steadily since the early '70s. A Forest Service study stated that the future of the region was bleak regardless of the park outcome, and even lumber company executives agreed that production would decline over the next decade. The Sierra Club blamed the companies for too-rapid harvesting of old-growth. But the loggers didn't care whose fault it was, the companies or the government. They were concerned about their jobs. They feared that the federal program would not provide skilled jobs. "These guys are not going out in the forest to rake leaves for \$2.50 an hour. Hell, I can't operate my chain saw for \$2.50 per hour." They believed that conflict over the redwoods would never be over as long as there were environmentalists around.³⁷

The final version of the bill, however, included income-maintenance payments, severance pay, job training and relocation allowances as well as preferential hiring treatment. It also gave the Secretary of the Interior authority to purchase up to 30,000 acres if he decided that it was necessary to provide a protective buffer for the

park.³⁸ While there were many warning that the income provisions would set a precedent, Senator Abourezk, the chairman of the Senate subcommittee that drafted the revision told critics that they were the ones who had worried whether timber companies would get paid enough for their lands. "I've never seen one bit of concern for the working stiff."³⁹

On March 28, 1978 the President signed the final bill, with a qualifying statement: "I must express my serious concern with the extraordinary worker protection provisions contained in this bill. I believe, in the absence of overriding national policy considerations, all workers who have lost their jobs through no fault of their own should be treated equally by the federal government."⁴⁰

Costs for the park would depend upon compensation claims for the land, but they would clearly be very large, with \$359 budgeted for acquisition and \$88 million more for improvement, public works and job retraining and income maintenance.⁴¹ A high price. But then, any price placed on a resource like the redwood, which satisfies the needs of man's soul rather than his body (aesthetic values is the term used by those who prefer the physical rather than the metaphysical aspects of the concept), is going to be considered exorbitant by some and dirt cheap to others. Economists who want to justify this kind of cost must use a

long time-frame of reference into the future and a very low discount rate. With the redwoods, the long time-frame at least is justified. They have been here for millennia, and at least some of them will be here as long as the institution known as the United States is here.

Summary

This land-use conflict pitted market goods against non-market goods. The fact that in this case both are exceedingly valuable and mutually exclusive made the issue a very bitter one. If the redwood was not a prime timber tree and at the same time a tree of overwhelming age and beauty, compromise would not have been so difficult. As it was, the issue raised questions that were not specifically addressed. Two were asked by J. F. terHorst in the Los Angeles Times:

- 1) Does a greedy timber company have a right to fell the surviving giants of the earth for the sake of making a buck?
- 2) Does some Sierra Club elitist have a right to tell a lumber worker to go on welfare?⁴¹

The fact that these questions are inherently biased does not alter the fact that they express the attitudes of the participants in the conflict.

These questions raise other questions. As a matter of national policy, how many redwood trees are enough redwood trees? At what point does the cost of acquiring more trees

exceed the benefits to society? And how do you evaluate these social costs and benefits--on a national or a local level? How do you reconcile the two? How do you convince people that the long-term benefits of a decision will exceed the short-term costs, when they must absorb the short-term costs? The government's answer in this case was to absorb the short-term costs itself.

When people say: How do you justify expansion of a park which was visited by only 35,000 people in 1976 and there are more than 283 square miles of old redwoods safe in over 100 federal, state and local preserves?--what is your answer? Should the same amount of money be spent in acquiring thousands of acres of scenic wilderness rather than a relatively small patch of redwoods, already so heavily damaged that it may not survive?

How do you justify maintaining the income of a few workers who have been put out of work by a federal action for six years, when another federal action in the same state--such as the cancellation of a defense contract in the aircraft industry--causes 25-50,000 people to lose their jobs? These people receive no such income assistance provisions.

A national natural resource policy, constructed within the constraints of our current culture and economic system, could provide the answers to these questions.

Unfortunately, as of June 1979 there are no answers.

Analysis of the Variables

The primary variables in this case are: (1) environmental factors, (2) resource management, (3) interest groups and their communications, (4) taxation and law, and (5) economic system.

Secondary variables are: (1) value system and (2) land tenure.

The only negligible variable is transportation system.

Environmental factors

Environmental considerations brought about the conflict. These included not only the physical degradation that endangered the tall trees, but aesthetic degradation, including the sights of clearcuts and the sounds of chainsaws.

The characteristics of the redwood itself were the reasons why these factors were important. In spite of its size and age it is very vulnerable to all types of environmental stress, particularly those kinds of stress that logging practices in the region both caused and aggravated.

The fact that the redwood is so huge and so old inspires a sense of awe in people, and they want quiet, peace and solitude so that the trees can be appreciated in an appropriate setting.

For these reasons, the two services that the trees provide--beauty and timber--cannot coexist. Space is required between the two uses. This is the first primary variable and leads directly to the second.

Resource management

Environmental groups and state agencies were particularly upset with both the federal government's management of the national park and the companies' management of private lands. They felt that the park had been ignored; that the boundaries weren't protected and that the protective authority given to the Interior Department had not been used. These groups blamed the government as well as the companies for the environmental crisis in the region.

They felt that the companies were following a cut-and-get-out policy. They claimed that clearcutting was inappropriate on such steep slopes, that they were cutting too much too fast with no consideration for proper logging procedures, regeneration or rehabilitation, and that the companies had gone into virgin redwoods in the Basin in anticipation of federal acquisition after they had benefited from harvesting the lands.

The companies, on the other hand, blamed the Congress for not acquiring lands as they had been authorized to do under the initial legislation. They could not afford to let

the lands lie idle with no returns. They stated that their harvest plans were regulated more than in any other area of the country, and that damage to the land was not occurring because of new cuts, but rather was caused by the old, unregulated and unrehabilitated cutover lands.

Interest groups and their communications

This is the third primary variable. While the most vociferous interest groups were the environmental organizations and loggers who focussed national attention on the area, state agencies played a major role as well.

The environmental groups used the media to great advantage. Photos of clearcut redwood tracts were seen all across the country. The groups attempted to make the redwoods a national issue and they succeeded.

On the other hand, the interest groups in the area also functioned very effectively and generated substantial leverage upon Congress. Loggers, companies and local government officials banded together in spite of their differences and became a very effective lobby, using their influence to delay passage of the expansion bill for one session, and winning extensive economic concessions for the loggers.

Taxation and law

This variable plays a major role in the conflict and to a degree was its cause. The enabling legislation of the

park created boundaries that were not appropriate to the ecology of the region. They could not protect either the aesthetic values of the park or its trees from possible destruction. Congress ignored ecological considerations and drew up boundaries based on short-term political and economic considerations that caused enormous political and economic costs in the longer run.

Although the enabling legislation was enacted, funds were not provided to enforce its provisions. Adequate park management was not possible under these conditions. Authority was given to the Secretary of the Interior, but nothing was done to ensure that it was used.

State laws were another major cause of the conflict. Until the State Forest Practices Act was passed in 1973, state regulation of harvesting practices was not adequate to ensure that environmental degradation would be prevented. By the time the conflict had reached serious proportions in the late '60s, however, the timber companies were protesting the multitude of agencies involved in permit authorization and the statutory authority of the California Department of Forestry.

In addition, past state tax laws had encouraged clearcutting and made efforts to preserve the redwoods economically infeasible.

The counties were concerned that their tax base would

be eroded, as timber is the major resource of the region. The bill, however, was written so that neither county would suffer a net tax loss as a result of expansion.

Economic system

The last primary variable, and the major source of conflict in the issue is economics. Although statistics varied as to how many people would be adversely affected by park expansion, the number was large enough so that it was the prime consideration of legislators. As a result of this concern extensive labor benefits were incorporated into the bill. While these were viewed as excessive by some, the consensus was that such compensation was necessary to assure passage of the bill.

There was also concern for the economic effect on the general area. Studies indicated that the area had been depressed and declining for many years, and with increasing mechanization and decreasing supplies of old-growth, it was just a question of time until the jobs would be gone anyway. Proponents of the bill argued also that tourism was increasing in the area and would gain in importance over time. Opponents replied that jobs appropriate to the tourist industry were not appropriate to the skilled, highly-paid labor force of the region. It remains to be seen whether the park will have a net positive economic impact on the region.

The concern of the timber companies was that they would not be adequately reimbursed for their lands. They fought to have compensation determined by the Court of Claims rather than the District Court and for the right to cut more timber in the national forests in exchange for the loss of their property rights.

They did not object, however, to selling their lands after the timber had been harvested, and all three companies were diversified and had extensive landholdings elsewhere. The General Accounting Office report indicated that they might not suffer financially, as they not only received substantially more monetary reimbursement from the initial Park legislation than had been anticipated, but they had received other productive federal timberlands in exchange for their lands.

Value system

This variable, although important, is a secondary variable. There was much concern expressed for the bill's effect on the logger's way of life. The loss of a job to a skilled, highly-paid workman is extremely serious, and other forms of employment that do not require as much skill would not be an adequate alternative. The fact that a logger might lose his job anyway because of mechanization or unavailability of timber is not the same as arbitrarily losing it because of a governmental decision to take private

lands. The loggers resisted the proposal with all means available to them.

Land tenure

The companies considered federal acquisition a "land grab". They claimed that there were enough redwoods already protected and that there was no need to acquire more. It is interesting to note that all of these lands were initially federal lands, sold for \$2.50 an acre under the Homestead Act and the Timber and Stone Act. At that time the redwoods were not much smaller than they are now.

Transportation

This variable is negligible, playing a very minor part in the conflict. Although access is necessary for a National Park and pressure was brought by the California Congressman to include lands for the rerouting of Highway 101 so that the existing road could be used as a scenic highway, this was included in the final bill with little discussion.

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SUMMARY

The purpose of this dissertation is to define the field of land use, to clarify its content, and to identify the principles that govern its phenomena. To accomplish this, a formula is proposed that can serve as a framework for the analysis of land use issues. This will enable the field to be regularized and formalized so that it can be viewed from an analytical perspective rather than as an amorphous hodgepodge. This, then, is a new methodology based on our definition of land use. Its value will be determined by its usefulness. In the eleven cases studied here, it proved to be an effective method of analysis.

Explanation of the Study

This research is based on the concept of abstraction, the process of taking from a body of material certain parts that, when analyzed and studied, explain the whole. The field of land use is so all-encompassing and complex that in order to identify its underlying principles one must abstract to a point where the material necessary for understanding is retained, while extraneous information is omitted. If too much information is included, the field will be impossible to unify and clarify. If not enough is retained there is the possibility that important aspects will be ignored. By abstracting to the right degree, one

achieves a satisfactory compromise between complexity and oversimplification; i.e. a satisfactory model of land use in relation to forestry.

The appropriate degree of abstraction is determined, in part, by (1) the time when the abstracting is done, and (2) the subject of the abstracting and its user. Over the years, the field has expanded to the point where a much greater degree of abstraction is necessary than would have been needed even a decade ago. Growth in population has brought about corresponding bureaucratic and institutional growth, and the resulting pressures have caused not only constraints upon land use that previously did not exist, but changes in the values and attitudes of our culture that pertain to use of the land. The growing public perception that--as so many analysts are stating--we are entering an age of scarcity--has caused concern for the uses of land that formerly either did not exist or was not expressed. This has created a paradoxical situation in which people are jealously guarding their own private property rights, while at the same time attempting to limit the property rights of others. They are also increasingly vocal regarding the use of public property and with the support of recent legislation that specifies their right to participate in the planning process of public agencies, they are increasingly willing to question agency decisions and to take their

objections to court, if necessary.^{1,2,3}

All of these factors--population pressures, increased environmental awareness, court decisions, the expansion of bureaucracy and institutional powers--have caused the field of land use to balloon into an area so large that extensive abstraction is needed to separate the wheat from the chaff.

The appropriate degree of abstraction depends too, upon both the subject and the user. To explain land use, we have first of all abstracted from the total field to this involving forest lands, simply because that is our area of interest. From this point, we further abstract by using the services that forest lands can provide to divide the field into specific study areas. Ten of these services are recognized. These are extremely broad categories because they must include all the values that people have placed upon the land. They thus serve a useful purpose in delineating different areas for analysis of the field, and allow us to abstract further by choosing specific cases that are concerned with each of these 10 services. Although some cases involve more than one service, each case illustrates at least one of the 10 services clearly. It should not matter which cases are used as our definition of land use implies that every case can be analyzed with the same formula. The cases were chosen specifically to include different dimensions of the dependent variable; i.e. place,

actors, services and time. In other words, the cases were chosen to cover many areas of the country over a range of different time periods, and to illustrate varying kinds and amounts of conflict and participant involvement.

By abstracting these few cases from an essentially infinite number that occur every year, we obtained a useable sample with which to work. After analysis of each case, it was found that the hypothesized formula could be used to express the case so that the component parts could be identified and their relationships understood. The formula thus satisfies our objective: to determine a useful framework for analysis of the land use field.

Methodology

The formula

The process of analysis of land use is as follows. We define land use as the ways in which man uses the earth's resources to satisfy his wants. These uses create issues that in turn can be used to explain the field. To do this we use a formula that expresses the issue as a function of specific variables.

$$I_{\text{past}} = \text{fn}(\text{VS}, \text{TL}, \text{ES}, \text{LT}, \text{EP}, \text{TS}, \text{RM}, \text{IG}).$$

The dependent variable

It is first necessary to define the dependent variable or Issue. There are four dimensions within which the boundaries of the issue are found.

Place is the first dimension. The place, or community, where the issue occurs includes not only the physical land base, but the social world relating to it.

A second dimension that must be identified is the service or services that this particular land base can provide, or the capability of the land.

A third dimension is the actors or protagonists concerned with a particular land use decision. These may be few or many. They include those affected by the services that the land can provide who want to be involved in any decision regarding land use. This is the dimension most difficult to ascertain, as protagonists may be found anywhere.

The fourth dimension is the time period of interest, a very important consideration as culture changes over time. Each of these dimensions must be identified before continuing.

The independent variables

The next step is an analysis of the independent variables of the field of land use. The variables and their definitions within the context of our culture are as follows.

- 1) Value system incorporates all our norms, attitudes and beliefs that affect our perceptions concerning land. The variable includes the value system of the people who

rely upon the land for physical products such as food and wood, as well as those who rely upon it for other less tangible products as beauty and the opportunity to build. The people then who should be considered in a land use decision are those affected by any of the services that the parcel of land can provide.

The value system of the people and the services of the land are interactive. The people's value system determines what services of the land are desirable, and in turn the services that are available to the people affect their values. To understand land use, it is very important that this variable be understood. In many if not most cases it would be a primary, heavily weighted variable and ignoring it, or weighting it at a lower level than it should be would then affect the characteristics of the issue. It is necessary to study not only the present sociological characteristics of the people but their history. While statistical data such as census information is useful, qualitative and impressionistic data more adequately explain this variable. Such data includes social classes and their characteristics, institutions and their characteristics (religion, family, education, politics, the arts), and citizen perceptions.*

2) Taxation and law includes statutory constraints upon the use of land. This variable is usually a primary one.

One reason for this is our national emphasis on land use regulation. While federal legislation has so far most affected our public lands, state land use legislation is increasing and both local and regional restrictions on the use of land beyond traditional zoning regulations are being enacted. While law is an actual constraint on land use, taxation indirectly acts in the same way. Particularly the tax provisions for forest lands and timber have played a major role in determining how those lands are used. Such taxes as capital gains and ad valorem or yield taxes may drastically affect land use decisions. These institutional constraints must be recognized for their importance in understanding why people act as they do.

3) Economic system incorporates the production, distribution and consumption of goods and services. The social system of necessity is an economic system. No one can afford to ignore economic considerations, although the importance of this variable will vary with the value system of the people. So while the economic system must be studied, it should be considered in conjunction with the values of the culture. To ignore this dependence may overweight the variable. As an example, in many rural communities where the level of living is low by national standards people do not consider themselves poor at all, and their behavior reflects this attitude, rather than their

economic circumstances. An additional point is that economic analyses should include all nonmarket values as well as the values of the market.

4) Land tenure incorporates property rights. Americans regard property rights as one of their basic constitutional privileges as free citizens in a free country. They resent any legal restrictions imposed upon their rights to use the land as they wish and in particular oppose governmental land appropriation in any form. Any land use decision that restricts the property rights of citizens in any manner will heavily weight this variable.

5) Environmental factors incorporates the aspects of the physical world that support our existence. As the nation's population has expanded and its natural resource base (land-man ratio) has correspondingly decreased, this variable has become increasingly important to people. The uniqueness or scarcity of a specific environment will determine its coefficient, as will the variety of its attributes: is it aesthetically pleasing, does it protect a watershed, does it serve as a buffer, does it help purify polluted air, etc.? Thus the more unique an environment and the more varied its attributes, the more important the variable in the equation. It should be noted that for a particularly unique environment, the value systems of people who may never even see it will contribute to its weighting.

6) Transportation system includes aspects of our mobility. This variable enters the formula as an inherent part of any land use. Land cannot be used without transportation facilities--railroads, rivers, highways, air corridors, or trails. This variable may commonly be a secondary or negligible one, but in some cases increased access is the most important factor in an issue--opening up the land so that different services are economically viable for the first time. Even when its importance is not obvious, this variable must be recognized for its catalytic effect.

7) Resource management embodies decisions regarding the use of land. The goals and practices of resource management often determine whether sharp conflict over the use of land will arise. In particular, any change in existing resource management goals and practices will tend to make this variable a primary one.

8) Interest groups and their communications includes groups or individuals having an expressed or implicit interest in how land is used and the ways in which they transmit information or ideas. This variable is becoming increasingly important. This is because of not only a philosophical change in the public's attitude but its increased sophistication in the use of such tools as law and communications.

The philosophical change has occurred fairly recently with a decrease in acceptance of arbitrary decisions. Where the public formerly would not question decisions, and the authorities or people in power had a free hand in land use decision-making, various legal decisions have upheld the right of the public to participate in the process. This has also affected the authoritarian bodies, who are now required to change their traditional administrative procedures. In addition, the communications media are now recognized as valuable forces that can change attitudes and affect decisions. While environmental and other interest groups have been using them most effectively, governmental agencies are becoming aware of their potential for persuasion. The weighting of this variable should not be underestimated as the organizational ability of interest groups and their knowledge and use of communications can override other variables that would instinctively appear to be more significant.

The analysis

After the dimensions of the dependent variable have been defined (the place, actors, services and time), and the independent variables have been studied, each variable can be given its weighting coefficient. This necessarily will be a subjective evaluation, but when the whole formula is viewed, the interactions of the variables can be identified

and their relative importance more easily determined. The variables can then be considered as primary, moderate or negligible in their significance and the equation produced that best illustrates a particular land use problem or issue. The characteristics of the dependent variable can then be more easily predicted or understood.

Use of the Results

There are two ways in which the ideas here advanced can be used. One is to understand the past and the other is to anticipate and influence the future. That is, the methodology offers a means for becoming either an informed observer of the field or a disciplined participant in land-use affairs.

In using the methodology to study the past, the weightings of the independent variables in an issue at successive points in time can be compared to identify changes over time. Various types of issues and the amounts of conflict they generate can be compared by noting the weightings of the variables; the consistency of the weightings can be noted, as well as the importance of the variables over the range of dimensions of the dependent variable.

All these findings can then be used not only to understand the field better and formulate theories, but to anticipate future land-use issues. When attempting to plan

for a given area, a resource manager can use the analyses of past issues or the theories derived from such issues to plan so as to minimize conflict. Sensitive areas can be identified and more attention given to those variables that are apt to affect the issue.

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A CONCEPT OF THE FIELD OF LAND USE IN RELATION TO FORESTRY

by

Heather Harvey

(ABSTRACT)

The objectives of this research are to clarify the field of land use as it relates to forestry and to identify the principles that govern its phenomena. Land use is defined as the ways in which man uses the earth's resources to create services to satisfy his wants. Any land use is an issue, as there are always alternatives. The proposition put forward here is that there are identifiable variables--always the same ones--in all land-use issues. With these variables a land-use formula is constructed so that detailed study and understanding of the field is possible.

The independent variables are: value system (VS), taxation and law (TL), economic system (ES), land tenure (LT), environmental factors (EF), transportation system (TS), resource management (RM), and interest groups and their communications (IG). The dependent variable in the formula is the issue (I) identified by the place or

community where the issue arises (p), the actors or protagonists involved (a), the forest service or services of concern (s), and the time when the issue occurs (t). The boundaries of the issue are found in these four dimensions. The functional relationship that characterizes forest land use then is:

$$(I_{\text{past}}) = \text{fn}(VS, TL, ES, LT, EF, TS, RM, IG).$$

The study is based on the concept of abstraction, which is the process of taking from a body of material certain parts that, when analyzed and studied, explain the whole. The subject of forest land use is thus abstracted from the totality of human experience.

A case study is chosen for analysis that concerns each of the services that forest lands can provide. These services are wood, recreation and aesthetic values, preservation, water and other environmental influences, minerals, wildlife, agriculture and range, residential development, urban development, and commercial development. The cases provide an overview of land-use issues that have occurred over time across the country.

Each case is analyzed by the following methodology. The dimensions of the dependent variable are identified and each independent variable is then studied within this context and its relative importance determined as either

primary, secondary, or negligible. The method proved appropriate for analyzing each of the cases studied and provided a holistic perspective as well as a framework for comparison or further analysis. The field of land use at any level of magnitude may be expressed in terms of the same formula. The validity of this concept of the field, however, will be determined by its usefulness to those resource professionals and policy makers who apply its principles in their work.