

EXECUTIVE SUMMARY

THE PINE BUSH INTERMUNICIPAL STUDY

1978²

FUNDED BY:

CITY OF ALBANY
TOWN OF GUILDERLAND
TOWN OF COLONIE
VILLAGE OF COLONIE

WITH ASSISTANCE FROM

NEW YORK STATE
DEPARTMENT OF
ENVIRONMENTAL CONSERVATION

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BALANCE — THE RESPONSIVE POLICY IN THE PINE BUSH

When a community decides to preserve or develop land, two positive community needs are being met. Sometimes, these positive values can be locked in direct conflict with each other when a specific parcel of land exhibits both high development and high conservation values. The Pine Bush is a natural landscape where the possibility of such conflict has become the subject of intensive public debate and concern.

In September of 1978, the City of Albany, Town of Guilderland, Town of Colonie and Village of Colonie with funding assistance from the New York State Department of Environmental Conservation commissioned The Saratoga Associates to examine the implications of growth in the Pine Bush relative to social, economic and environmental issues. This study encompassed a 14,569 acre area bounded by Route 5, Route 20, Fuller Road, Route 146 and the Albany-Schenectady County line. Thirty-two percent (4,668 acres) of the area were developed prior to this evaluation.

Located at the heart of the regional transportation system (Northway, Thruway and I-90), the Pine Bush has geographically become a logical area to accommodate local community growth. Past generations, unaware of the environmental consequences of their actions, undertook sizeable community investments to build extensive road and utility networks for the purpose of encouraging growth. The active development of the Pine Bush was well underway by the time adequate environmental awareness was generated. At this time, the communities face the painful but important task of deriving a land use policy consistent with current knowledge and social values.

Further compounding the situation is an unanticipated factor — the energy crisis. As many people move closer to their jobs in state government and local industry, the strategically located Pine Bush has begun to receive substantial growth impact. To prevent undesirable sprawl, conserve ecologically important land and assure an optimum level of quality for the residents of the four communities, an equitable, balanced plan for the Pine Bush seems to be a reasonable and necessary need. A sound analysis of the area's physical resources will have to be combined with creative public policy objectives to achieve such a plan of action. This study concentrated on providing the quantitative data concerning natural-physical, built-physical, social-political and economic conditions and characteristics of the Pine Bush necessary as a foundation for such policy planning.

ENVIRONMENTAL BASE ANALYSIS

The environment is dynamic, not a stable or unchanging entity. The analysis of any proposed development or preservation activity in the Pine Bush must consider the action's effect on a number of interrelated components. In order to define these components it was necessary to gather and interpret known information about the Pine Bush. Although the informational base will never be 100 percent complete due to the complex and/or ever-changing nature of the environment, it is possible to achieve a general understanding about these components and establish a base reference that can be adjusted to accommodate new information in the future. While certain environmental factors can be described in

an objective manner, many areas of interest are highly subjective or political in nature and must be reviewed in that context. The following brief synopsis describes the significant findings of this research.

NATURAL-PHYSICAL ENVIRONMENT

The components of the natural-physical environment researched during this study were topography and slope, bedrock and surficial geomorphology, hydrology, climatology and air quality, flora, fauna and specialized flora/fauna relationships.

TOPOGRAPHY and SLOPE

The topography of the area began forming when glacial Lake Albany retreated, exposing a sediment filled lake bottom. The forces of wind shaped these sand deposits into dunes on the relatively flat lake bottom. The predominant landforms now consist of sand dunes and swales, flat sand plains and eroded stream channels and clay headwalls. These landscape elements give the Pine Bush its distinctive surface appearance and influence the creation of certain animal habitats in the ravines, wetlands and sandy uplands.

BEDROCK GEOLOGY and SURFICIAL GEOMORPHOLOGY

The development of current geologic features of the Pine Bush began approximately 460 million years ago when the ocean extended inland, covering the area.

A series of intense geologic activities raised the elevation and forced out the sea. Erosive action of three pre-glacial rivers created valleys through the area. About one million years ago, advancing glaciers eroded layers of bedrock and deposited various layers of boulders and soil. After this glacial retreat, land was inundated with the fresh waters of Lake Albany. As the waters receded and the action of wind and surface water took its toll, six natural geological categories were formed. They are bedrock, windblown sand, lake clay and silt, stratified drift, glacial till and flood plain deposits.



HYDROLOGY

Water flow in the streams of the Pine Bush is substantially supplemented by ground water, especially during dry periods. Flood hazards exist within the Pine Bush in the stream valleys. Lake Rensselaer, Glass Pond and at least 30 significant wetlands comprise the balance of surface water collectors. Current research into the quality and quantity of water resources in the shallow and deep aquifers is attempting to clarify the actual potential of the Pine Bush to yield its massive water reserves for human use.

CLIMATOLOGY/AIR QUALITY

The climate of the Pine Bush is primarily continental in character, but is subject to some modification from the maritime climate which prevails in the extreme southeastern portion of New York State. In general, air quality is higher than that encountered in the surrounding urban areas due in part to its undeveloped character and large proportion of nonpolluting land uses.

FLORA

The Pine Bush is an area with a vegetative cover not normally encountered in upstate New York. The present vegetation has been created in response to conditions such as soil character, climate, topography, the effects of fire, and more recently, human habitation. The Pitch Pine dominates the plant community of the Pine Bush. The perpetuation of this community has been and continues to be facilitated by the reoccurrence of fires. Fire effectively brings natural succession to a temporary halt. If fire becomes a consistent factor, only highly adapted plants will survive. This indigenous vegetative system is threatened by urbanization, modification of the land surface and drainage patterns and absence of fire.

FAUNA

There is an abundance of wildlife in the Pine Bush. There are over 30 species of mammals, 150 species of birds and 22 species of reptiles and amphibians. This abundance is a direct result of the unique vegetation and variety of habitats within the area. The Pitch Pine-Scrub Oak Sand plain associations provide habitat for several very specialized species of wildlife including the Karner Blue Butterfly, the Buck Moth and the Prairie Warbler.

BUILT-PHYSICAL ENVIRONMENT

The components of the built environment including current land use, land use controls, historical context, transportation, and utility services relate to the demand placed on the environment to satisfy human needs.

LAND USE

Any determination of land use policy must consider current uses. The majority of land in the study area — 65 percent — is in some form of open space use. The most significant use — 19 percent — is for residential purposes. The balance is in commercial, industrial and transportation uses.

LAND USE CONTROLS

Seven governmental units have varying degrees of land authority in the Pine Bush. It is likely that any proposed land use, for conservation or development, will be monitored by current regulatory process.

HISTORICAL CONTEXT

Archaeological evidence suggests that the Pine Bush has been utilized by humans for at least 10,000 years. Early people used a form of fire management to enhance game and food producing qualities. There are a number of important historic sites and buildings.

TRANSPORTATION

The Pine Bush is almost in the center of a transportation hub that connects major and minor population centers of the northeast. Historically, very strong relationships exist between the accessibility of an area and resulting development pressure.

UTILITY SERVICE

The Pine Bush is well serviced by water, sewer, and electrical services. The provision of these services intensify developmental pressures.

SOCIAL-POLITICAL

There are presently 3,983 housing units in the Pine Bush occupying 2,822 acres. By the year 2000, a need for 7,777 total units is projected. This demand could be significantly underestimated based upon recent trends related to energy and life-style issues. Functional services such as education, police protection, fire protection, recreation and health care are all impacted as population volume changes. It is important to know the remaining capacity in the existing system for long term planning purposes.

ECONOMIC

The economic research evaluated certain aspects of the public and private economic structure as they relate to various development/conservation issues. The criteria relative to the private structure was composed of items relative to project feasibility (investment — capital expenditures, revenues and cost). The public structure evaluation included research into the costs of providing services, current public investments in the area, tax income and other revenue sources. These aspects were evaluated in a manner that permitted fair assessment of the costs and benefits to all parties.

CONSERVATION POTENTIAL

While all land has some conservation potential, certain lands have special characteristics worth consciously conserving. Although absolute standards relative to each characteristic are impossible to define, significant relationships can be interpreted. In this study, certain factors were evaluated for their sensitivity to human activity and/or significance in the overall context of the ecosystem. They were slope, subsurface hydrology, surface hydrology, geomorphology, flora, and fauna.

SLOPE

Areas of moderate (8-15%) and severe (15% or greater) slope are worth protecting for a number of reasons including erosion control, special scenic quality and safety.

SUBSURFACE HYDROLOGY

The substantial underlying shallow and deep aquifers are important to conserve. They exhibit potentially large sources for domestic and municipal water supply.

SURFACE

HYDROLOGY/GEOMORPHOLOGY

The streams and adjacent ravines are extremely sensitive to active use. The springs feeding the streams are subject to pollution and reduction of available surface water recharge. Glass Pond and Lake Rensselaer

are considered of high conservation value for visual and recreational purposes. Over 30 wetlands have adequate conservation value to be protected under procedural law in New York State. The clay and silt soils in the Pine Bush are highly plastic and subject to mass movement and should be protected from disturbance.

FLORA

Vegetation is a significant conservation factor for such reasons as erosion control, wildlife habitat, scenic quality and noise, wind and visual buffer. While many categories of vegetative cover are important, the unique coniferous tree — deciduous shrub cover should certainly be conserved.

FAUNA

The Karner Blue Butterfly is on the New York State endangered species list and should be highly considered in any conservation plan. The Buck Moth and various wetland fauna, although not endangered or protected at present, are worthy of conservation efforts.



CONSERVATION COMPOSITE

Once these factors were evaluated, a composite or additive ranking was accomplished to obtain an overall hierarchy of land value for conservative purposes. The comprehensive evaluation chart depicts the process employed.

DEVELOPMENT CAPABILITY

Almost all land has some capability for development. There are efficiencies to be gained from sound locational decisions. Certain characteristics about the environment affect building economies. The factors considered in this study were utilities, transportation, zoning, slope, soil, and surface hydrology.

UTILITIES

The proximity to and availability of water and sanitary sewer service is a prime determinant in the pattern of new development. Service in the area is very adequate.

TRANSPORTATION

Proximity to transportation networks is not only a necessity from a commercial viewpoint, but also for creating efficient land use patterns. In general, the Pine Bush has extremely high convenience.

ZONING

While zoning standards in the Pine Bush varies and reflects the separate land use policies of each of the four municipalities, it is not restrictive to development.

SLOPE

Limitations to development increase as slope increases. Steeper slopes increase design, construction and maintenance costs for various technical reasons.

SOIL DEPTH TO HIGHWATER TABLE

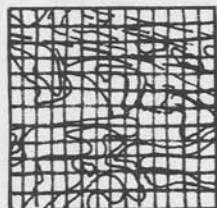
Many limitations imposed on development are soil-related factors. Within the study area, the predominance of deep sandy soils offers few limitations to development. However, the extensive shallow aquifer does cause a seasonal high water table in some areas.

SUBSURFACE HYDROLOGY/GEOMORPHOLOGY

Flood plains and wetlands were judged to severely restrict economically sound construction. The exposed lake clay and silt within the study area exhibit extreme hazards to development.

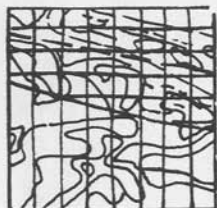
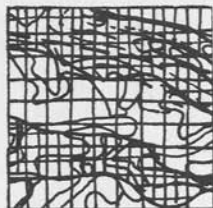
DEVELOPMENT COMPOSITE

While market factors such as land price and existing ownership, tax assessment inconsistencies, locational preference and the like are not reflected, the above fac-



**CONSERVATION
COMPOSITE**

**CONSERVATION FACTORS:
SLOPE, VEGETATIVE COVER,
WILDLIFE HABITAT, SURFACE
HYDROLOGY GEOMORPHOLOGY,
SUB-SURFACE HYDROLOGY**



**DEVELOPMENT
COMPOSITE**



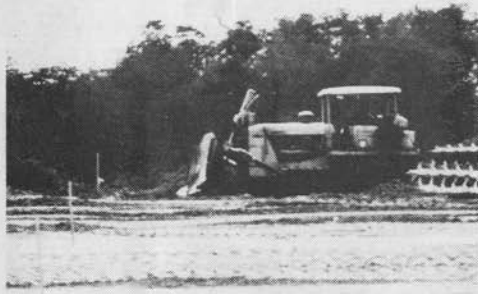
SUMMARY MAP

**POLICY
DETERMINATION**

**DEVELOPMENT FACTORS:
SLOPE, WATER TABLE,
TRANSPORTATION, SURFACE
HYDROLOGY GEOMORPHOLOGY,
UTILITIES, ZONING**

**COMPREHENSIVE
EVALUATION PROCESS**

tors were evaluated and ranked to obtain an overall hierarchy of land value relative to development capability.



SUMMARY MAPPING

The SUMMARY MAP, on the reverse side of this document, is a consolidation of the Development Capability and Conservation Potential Composite Maps. The eleven categories shown establish relative land values in terms of conservation and development. While these values should guide future land use decisions, the SUMMARY MAP, does not express a plan for the Pine Bush. It is important to recognize that this map purports only to represent a hierarchy of relative values.

The SUMMARY MAP indicates that 815 acres of high development and 668 acres of moderate development areas exist with low conservation value. Furthermore, 1,156 acres fall into a moderate conservation-high development category and 1,829 acres into a moderate conservation-moderate development category. These latter 2,985 acres may be developed if reasonable design and construction safeguards are followed. The usable area for development of various densities total 4,460 acres.

Some land is too valuable for conservation purposes to be intensively developed. Some 5,119 acres fall into categories where conservation goals should be the leading factor in determining land use policy. The 314 acres of low value land could be utilized to create contiguous parcels for either development or conservation purposes. The balance of the 14,569 acre study area is already developed.

The following are abbreviated definitions of each category shown on the SUMMARY MAP:

1. **Developed Land** represents all parcels developed prior to the commencement of this study.
2. **High Conservation** areas exhibit more significant factors for conservation than any others. As well, they offer little benefit for developmental purposes.
3. **Moderate Conservation** lands are slightly less significant than high value areas but still exhibit many quality conservation characteristics. Useful for preservation and/or some form of active recreation. These areas have severe limitations to development.
4. **High Development** represents lands which exhibit

the fewest restrictions and most favorable conditions to development and only low value for conservation purposes.

5. **Moderate Development**, while suitable for development, exhibit some economic restrictions. These areas have low value for conservation.
6. **High Conservation/High Development Conflict** should, if possible, be preserved for environmental purposes. However, their economic value creates a difficult policy situation.
7. **High Conservation/Moderate Development Conflict** should be preserved for conservation purposes. Any minimal use of these lands should be carefully considered.
8. **Moderate Conservation/High Development Conflict** areas should be used for development. However, adequate environmental safeguards and low densities should guide development in order to conserve valuable assets.
9. **Moderate Conservation/Moderate Development Conflict** lands may be developed. However, the higher costs of assuring proper environmental safeguards and lower densities may make such development economically infeasible.
10. **Protected from Development** primarily represents the regulated wetlands. This category is applied to areas which are procedurally protected under New York State law. These areas do exhibit high conservation values.
11. **Low Value** areas exhibit low values for both conservation and development.



FISCAL EVALUATION

A fiscal evaluation was accomplished through the use of a computerized tool, the Community Development Impacts Models (CODIM).

In the Pine Bush, 18 potential major land use changes were identified, ranging from the contemplation of building a reservoir on the Hunger Kill to implementing a new land use plan in the Town of Colonie to the possibility that a 25 percent error in the projection for the year 2000 Capital District Population exists. These potential impacts were arranged in 65 combinations each having its own fiscal implications. The evaluation

centered on the following concerns. Will this work? To whose advantage? What is the difference between alternatives? Is it significant... positive or negative?

While physically, with only minimal density increases, these scenarios could all be built upon developable land with no significant conflict with conservation values, a management system to assure good overall design (land use distribution) as well as a fair sharing of costs and revenues would have to be developed. Otherwise, one community could receive a direct fiscal benefit at the expense of a neighbor. As such, the issue becomes one of cooperation or competition in the Pine Bush. It would be more efficient to plan and develop the Pine Bush in a coordinated fashion. If an overall system is not established, only the land-rich Town of Guelderland could capitalize on their fortunate circumstance. Even that competitive edge would be greatly diminished by the development of the Hunger Kill Reservoir.



The other three communities are in quite different positions. The City of Albany could pursue its Pine Bush goals satisfactorily if the significant increased housing demand under a 25 percent population projection error scenario could be drawn to downtown. While the City has made serious efforts to increase the desirability of center-city living, a shortfall of some 8-9,000 units of housing might exist. Attracting this volume downtown will be difficult even though advantageous if achieved. The problem is physical and not fiscal.

The Town of Colonie's Pine Bush goals as expressed in their potential land use plan change can be satisfied unilaterally. However, it is unreasonable to attempt housing any extra population, as in the case of the 25 percent error scenario, in the Pine Bush. The Town will be forced to look to its northern land areas for substantial growth. The Village of Colonie, dealing with a smaller economic mass and more constricted development capability, shows the sign of being the most volatile in an economic sense. Proper planning is highly advisable, if not critical. Surprisingly, the Village could be the community receiving the largest benefits from coordinated planning and management.

The development of better demand-growth statistics is a necessity before more realistic projections can be developed. As in any good marketing program, each community — together or individually — could define the population market they would like and then develop zoning and land use plans which attract and direct appropriate growth.

MANAGEMENT ALTERNATIVES AND DEVICES

In this study, various planning, regulatory and physical management scenarios have been considered. Research into known legal control alternatives was undertaken. Scenarios describing ranges of community and inter-community action alternatives were developed. However, no attempt was made to develop an alternative as a recommended course of action.

The results of the physical and economic evaluation indicate that the Pine Bush could support responsible levels of environmental protection as well as all development scenarios currently proposed or assumed. It can be concluded that the four communities could adopt a policy which reflects equitable conservation and development goals. As well, they could pursue some method of coordinated cost-revenue sharing, planning and long-term management. While these broad goals are possible to achieve, not all management alternatives would produce a system responsive to them.

The physical characteristics of the study area would permit the accommodation of necessary development while protecting the sensitive lands. Even so, the establishment of a coordinated management system is complex. It is important to recognize that the area in question is situated within four separate municipal boundaries, each with their own planning-zoning boards, conservation-boards and governing bodies. Further, community concern for home rule control is a legitimate and crucial issue. Any management system conceived to coordinate planning, protection and development for the entire Pine Bush must be responsive to the specific interests and goals of each community. No community should suffer or profit at the expense of another under a coordinated management system. Rather an equitable distribution of cost-revenue sharing, control in administrative decision making and so forth would seem not only desirable but fair and necessary.

Finally, contiguous land relationships are often necessary for successful development and/or conservation efforts. Without coordinated planning, implementation of projects (for development or conservation purposes) with adequate contiguous land is unlikely. It is difficult to avoid the need for comprehensive planning if the communities wish to create a balanced use of land. Once a land use plan is determined and the resultant conflicts and general policy directions assessed, a number of different techniques may be used to manage and implement the plan. The considerations of actual land area shape, market and potential public and private cost implications are basic to determining which techniques are appropriate.

Developing an implementation strategy for channeled development, open space acquisition, preservation, and maintenance is a major step in the process. Implementation of any plan requires a variety of legal devices. As well, participation by private and public interests is a necessary aspect in implementation.

Implementation strategy is characterized by levels or degree of control. What extent of control is necessary? Is outright acquisition needed, or will regulations suffice? Answers to these questions are crucial.

NEXT STEPS

The next steps are rather simple to state and undertake. The first step is a policy decision. The communities must reinforce their current commitments to an equitable development and conservation program.

Step two becomes a logical continuation of the current study. That is, the development of a conceptual plan for the channelization of development and conservation in the Pine Bush. Such a plan, while not intended to be a final land use proposal, would test the physical capability of implementing the various land use management concepts developed in this original study. For example, the potential for satisfying necessary contiguous land parcel needs for certain conservation and development uses can be tested in no other fashion. Also, such information would seem essential in order for the communities to determine the form of an appropriate long-term management system. In this step, it would be necessary to refine and update the community's data based on the 1980 census. However, nearly all necessary information and decision-making tools are now ready for use. After general land use allocations, developmental constraints and managerial needs are defined, the third step would be to create a customized management system. With such a vehicle determined, the detailed planning and regulatory processes could be implemented. In the meantime, local planning and zoning boards will have the benefit of this study to aid them during the transition period.

