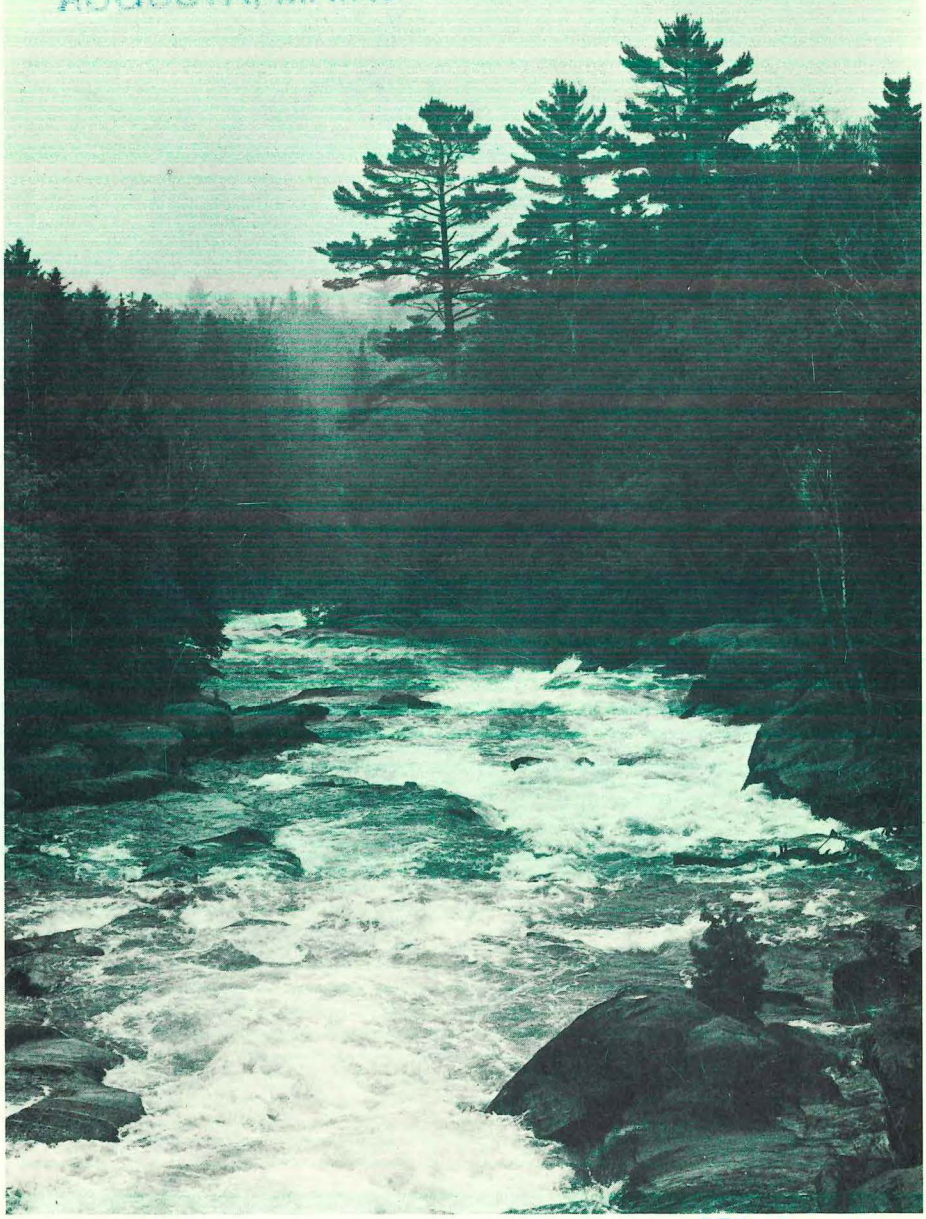
LAND USE PLAN



Land Use Regulation Commission
MAINE DEPARTMENT OF CONSERVATION

COMPREHENSIVE

LAND USE PLAN

FOR AREAS WITHIN THE JURISDICTION OF THE MAINE LAND USE REGULATION COMMISSION

Land Use Regulation Commission

MAINE DEPARTMENT OF CONSERVATION

Originally adopted in 1976
Revised in 1983

STATE OF MAINE
OFFICE OF THE GOVERNOR
AUGUSTA, MAINE
04333

JOSEPH E. BRENNAN
GOVERNOR

October 20, 1983

Land Use Regulation Commission Members
Department of Conservation
State House Station 22
Augusta, Maine 04333

Dear Commission Members:

I am pleased to approve the Land Use Regulation Commission's Revised Comprehensive Land Use Plan. Congratulations on a job well done.

I am particularly pleased that the Plan recognizes the need to create jobs for Maine people as well as to protect the resources in Maine's wildlands. Although it is a difficult task, there is no question in my mind that we need to accomplish both objectives. I firmly believe we have a responsibility to future generations to protect what is special about the wildlands. At the same time, we have a responsibility to provide quality jobs for Maine people. Obviously the timber, energy and mineral resources of the wildlands will play a key role in our economy in the years ahead.

The Maine Rivers Law is an example of the kind of balanced policy for the use of our resources I feel serves the best interests of Maine people. It provides for significant hydropower development to help meet our future energy needs, while it wisely protects what is truly outstanding about our finest rivers. I feel it is particularly important to accomplish both these objectives. We certainly need to protect our exceptional river resources. At the same time, however, we need to reduce our dangerous dependence on foreign oil. This dependence drains our economy of needed capital and threatens the security of jobs for Maine workers.

LURC's record demonstrates that with judicious planning and well reasoned decisions we can protect special natural values while allowing needed economic growth. I understand that at the same time that you have protected ground and surface water quality, reduced erosion, and maintained critical wildlife habitats, Maine's forest products industries have grown substantially. The pulp and paper industry alone has invested $1.5 billion in new or renovated plants, built over 5,000 miles of new haul roads, harvested over 30 million cords of wood, and increased average annual wages from under $8,000 per year in 1971 to almost $25,000 in 1983.

I urge you to continue on this responsible course of action in facing the challenges ahead and look forward to working with you to implement this plan.

Sincerely,

Joseph E. Brennan

JOSEPH E. BRENNAN
Governor

JEB/bls

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Staff members of the Land Use Regulation Commission contributed to and reviewed numerous drafts of this Plan. Others from the Department of Conservation, State agencies, and public and private organizations assisted by reviewing the Plan and participating in public hearings.

We thank them all.

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Appendix A: Land Use Regulation Commission Policies Concerning Deer Yard Issues

Appendix B: Applicable State and Federal Land Use Laws

Chapter 1

The Land Use Regulation Commission

Introduction

The Maine Land Use Regulation Commission's (LURC) jurisdiction consists of 40 plantations, 6 towns, 415 unorganized townships, and more than 300 coastal islands and ledges. It contains nearly 10.3 million acres of water and land, representing roughly half of the state's area (see figure 1).

It is a quietly spectacular land of high mountains, vast forests, and cool, swift streams and rivers, lakes and ponds of all sizes. It contains the headwaters of the State's major rivers and abounds with fish and wildlife. It was once the hunting grounds of Native Americans, and many of its features bear their names — Passadumkeag, Chemquassabamticook, Nesowadnehunk, Caucomgomac, Moosehookmeguntic, Chesuncook, Seboomook.

In the 17th century European explorers and settlers came to cut the white pine of the islands and the coastal lands. By the 18th century, loggers had moved inland. In the 1850's, spruce was harvested and by the turn of the 20th century fir became valuable as the demand for pulpwood rose. Early woodsmen, trappers, and hunters took full advantage of the bountiful wildlife.

Today, canoeists, hikers, mountaineers, hunters and campers view the unorganized areas as a unique domain where they can go back in time to enjoy a natural world resembling the one enjoyed by generations before them.

However, the land uses have not remained static. Timber has been cut and removed up to four times in some areas. Harvesting technologies have changed from horse logging in the frozen winter months to more intensive management and the use of large and potentially more environmentally damaging equipment. Road construction for timber transport has provided more and more access to the region. Over 11,500 miles of roads exist today. Roughly 10,000 of these miles are part of the expanding private haul road system which grows each year. These roads crisscross the vast forestlands and have opened up once remote areas for recreational and other uses. As a result, some of the more accessible lakes have become ringed with camps and seasonal homes. People relying on the woods for their livelihood have settled along public routes. Alpine ski resorts, especially in the western mountains, are accessible within a day's drive of many large, eastern urban centers.

The increased accessibility combining, in the late 1960's, with growing affluence and leisure time, caused a recreational subdivision upsurge. There was concern that without adequate planning and zoning standards, unregulated development and land use would radically and permanently change the unique character of Maine's wildlands. These lands are part of a working landscape whose forests have, in some places, been harvested up to four times. Nonetheless, they remain in the minds of many remote and wild.

Figure 1

LURC JURISDICTION

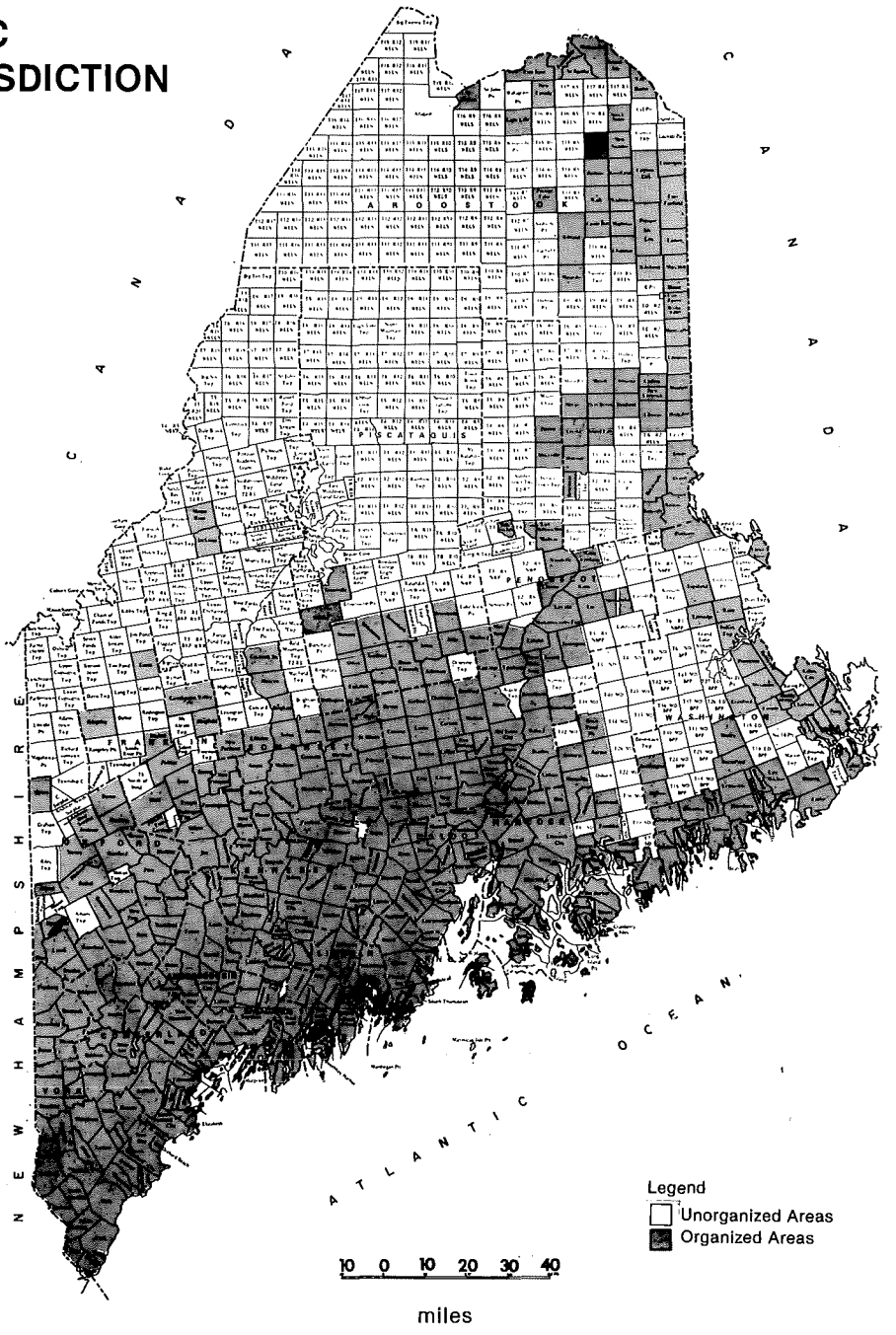


Figure 1. The Maine Land Use Regulation Commission's jurisdiction (white area on map) consists of 415 unorganized townships, 40 plantations, 6 towns, and more than 300 coastal islands and ledges. It encompasses approximately half of the state. The Commission's jurisdiction excludes the 8 unorganized townships which comprise Baxter State Park.

Source: Maine Land Use Regulation Commission, 1982.

In an effort to insure that orderly development and land use be allowed to take place while maintaining the natural character of the jurisdiction, the people of Maine, acting through the Legislature, created the Land Use Regulation Commission. On October 1, 1969 the first Land Use Regulation Law became effective. In 1971, the 105th Legislature expanded the Commission's jurisdiction to its current boundaries. The 1971 statute, although amended over the years, forms the basis for the Commission's responsibility for applying the principles of sound planning and zoning in the unorganized areas; protecting public health, safety, and welfare; insuring an ecological balance; and encouraging well planned, multiple use of the natural resources so important to this region and to the state as a whole.

The Jurisdiction

Coastal lowlands, river valleys, rolling hills, mountains, islands, and a broad plateau represent the varied physiographic regions of the Land Use Regulation Commission's jurisdiction. The jurisdiction is the largest predominantly undeveloped area in the Eastern United States, and one of the few regions in the Eastern United States where conservation of large areas of woodland is possible (see figure 2).

A combination of history, landownership, location, soils, and climate account for the undeveloped character of the jurisdiction. The settlement movement which swept across the country from East to West largely bypassed the remote corners of this northeasternmost state.

The Webster-Ashburton Treaty of 1842 ended the Aroostook War and fixed the Maine-Canada border. The establishment of the boundary halted Canadian settlements approaching from the St. Lawrence. The short growing season, severe winters, large ownership patterns, and relatively poor agricultural soils also discouraged settlements. Most importantly, the management of the region primarily for timber production has allowed the unorganized areas to retain an undeveloped character.

Nearly 95% of the land is privately owned, with land management and pulp and paper companies owning and controlling a large portion of it (see figure 3). Much of this land is held by multiple owners sharing common and undivided interests. Public ownership includes roughly 400,000 acres of public reserved lands, 41,000 acres of state parks, and 71,000 acres of federally owned land.

Year round population is about 13,000 with residential development concentrated in the plantations and in the townships adjacent to organized municipalities. There is not a single community within the jurisdiction with a population over 700. Population centers that influence the jurisdiction are outside the area.

The single most outstanding feature of the jurisdiction is its 9.25 million acres of forests. The dominant forest type is spruce-fir, much of which is currently being stressed by a severe spruce budworm outbreak. Northern hardwoods, including maple, beech, and birch, comprise the second most abundant forest type. The forest is Maine's most valuable economic resource and supplies much of the raw material for the state's wood industries.

Five major river systems originate in the jurisdiction. They are the St. John, St. Croix, Penobscot, Kennebec, and Androscoggin. In addition, there are many other riverine systems and roughly 3,400 lakes or ponds an acre or more in size which comprise nearly 660,000 acres of surface water. Many of these waters have been classified as clean enough to drink, but acid precipitation caused by airborne pollutants, especially from the Midwest, is lowering the pH of many lakes, threatening to make them uninhabitable for a host of aquatic species.

Most of Maine's mountains of 1,000 feet or

Figure 2
THE REGION

Figure 2. This composite LANDSAT satellite image shows the relative isolation of LURC jurisdiction. The darker areas represent the jurisdiction where the land cover is made up almost entirely of forests and water. (The white spots in the jurisdiction are areas of cloud cover.) The land cover in the lighter-toned areas which surround the jurisdiction is dominated by open lands, roads, towns, and cities and contrasts sharply with the little-developed wildlands.

Source: LANDSAT mosaic assembled by Maine Land Use Regulation Commission from 1972 images provided by EROS Data Center.

higher are located in the jurisdiction. These include Saddleback, Old Speck, Bigelow, and Mt. Abraham.

The undeveloped nature of the region has made it attractive for recreation for a century and a half. In recent years, recreational demand has increased as the number of available sites for hunting, fishing, and lakeshore development in the heavily populated Eastern United States has decreased, and as downhill skiing has become more popular. A seasonal population of 34,000 and a large number of other visitors use the region for hiking, camping, fishing, hunting, and skiing, canoeing, rafting, and wildlife study.

Commission Function and Organization

The Commission, consisting of 7 public members appointed by the Governor, is charged with implementing the Land Use Regulation Law. The Commission members hold staggered four year terms. The Law provides that four of the members must be knowledgeable in one of the following fields: commerce and industry, fisheries and wildlife, forestry, and conservation. One member is elected annually to chair the Commission, and no action may be taken unless approved by a vote of at least 4 members.

A small staff carries out administrative, operational, and other program functions of the Commission. A Director is appointed by the Commissioner of the Department of Conservation with the approval of the LURC Commission members. The Director is delegated by the Commission the authority to act directly upon applications which are not controversial; and the Director is responsible for recommendations to the Commission on all matters coming before it.

The staff of the agency is informally organized into five operational units: Development Review; Land Use Planning; Resource Analysis; Education and Enforcement; and Administration. While each unit performs one of the Commission's basic functions, there is much joint participation and sharing of the Commission's many tasks and responsibilities.

Development Review

This unit of the staff is primarily responsible for processing and reviewing the many hundreds of permit applications, zoning petitions, notifications, and requests for variances received every year.

For zoning changes and large scale or controversial projects, the staff briefs and provides recommendations for action to the Commission members, who make the final decisions at public meetings. The development review staff operates under statuatory time limits for responding to applications, and therefore must analyze projects quickly, yet thoroughly.

In addition, the development review staff administers the "one-stop" inter-agency review and coordination procedure, where an application need only be submitted to one agency when multi-agency (LURC, Department of Environmental Protection and/or Department of Inland Fisheries and Wildlife) jurisdiction exists. In the case of virtually all permit applications involving multi-agency review or approval affecting lands within the Commission's jurisdiction, LURC is the agency which receives, processes, and coordinates responses.

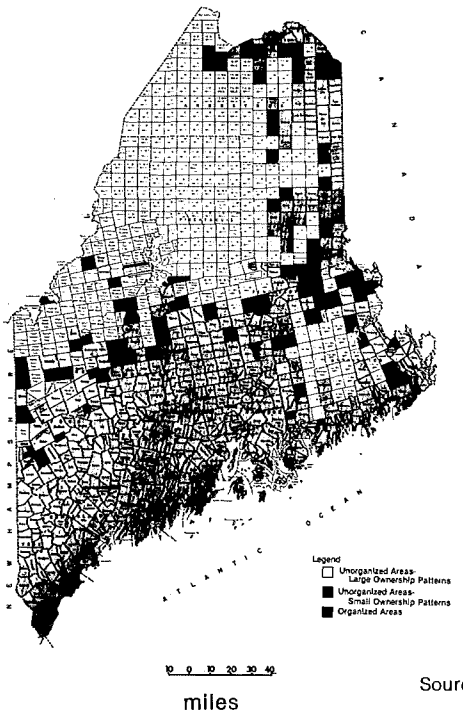


Figure 3

GENERAL OWNERSHIP PATTERNS WITHIN LURC JURISTICTION

Figure 3.

Most land in the interior of LURC jurisdiction is owned or controlled primarily in large blocks by land management and pulp and paper companies. By contrast, in the areas of the jurisdiction adjacent to organized towns, ownership is divided among more and relatively smaller land ownerships.

Source: Maine Bureau of Taxation, Property Plans; Town and Plantation Property Tax Maps; LURC data files.

Land Use Planning

The chief function of this unit of the staff is in the preparation of planning and zoning control standards for Commission consideration. This is achieved by preparing and periodically reviewing and revising the land use standards, regulations, and guidelines of the Commission, as well as the policies of this Comprehensive Land Use Plan. Other functions include: administering and supervising the federal 208 water quality program, preparing and distributing various publications of the Commission, and providing land use planning assistance to towns and plantations. In this regard, the planning staff recently prepared a Model Land Use Ordinance which can be used by local governments in LURC jurisdiction which are interested in regulating land use on a local level.

Resource Analysis

This unit of the staff is responsible for preparing and updating the more than 500 zoning maps of the Commission's jurisdiction, analyzing and presenting staff zoning proposals, displaying and explaining land use information at Commission and other public meetings, and maintaining and improving land use and natural resource inventory data records and maps.

Education and Enforcement

The education and enforcement unit of the staff was created only three years ago because of a growing awareness by the Commission that a full scale effort was necessary to assure a reasonable degree of compliance with the environmental laws and regulations it

administers. In setting up this program, the Commission has coupled enforcement with education efforts. Though this program is still relatively new, and the staff which can be assigned to it is relatively small given the vast area of the Commission's jurisdiction, the commitment to this effort is a major one, and the program to date has been active and successful.

This unit also coordinates and administers the joint enforcement efforts of field personnel from the Departments of Inland Fisheries and Wildlife, Conservation, and Environmental Protection. Through this effort, the relatively large field staffs of these agencies are instructed on the LURC law and standards and assist in reporting and investigating violations uncovered during their field patrol work.

An equally important function of this staff unit is to carry out educational activities in order to inform the public about the laws and regulations of the Commission. These activities include corresponding with groups and conducting training sessions for foresters, loggers, builders, and State officials. Also in an educational effort the Commission has prepared and published a national award winning series of six *Land Use Handbooks,* each one explaining different aspects of the Land Use Regulation Law or describing environmentally sound land use practices. As with all of the Commission's publications, the handbooks are available free to any interested party. A complete Handbook set has been given to each school library in the State, and it has been incorporated into the Maine Studies Curriculum.

Administration

This unit consists of the Director, the Assistant to the Director and a small clerical staff serving the entire agency. The director is responsible for overseeing all of the work of the Commission's staff, the direct issuance of permits on routine matters and the recommendations made by the staff on matters coming before the Commission. In addition, this staff is responsible for the preparation and administration of the Commission's budget as well as all legislative matters affecting the Commission's work.

Zoning Tools

In accordance with its enabling statute, the Commission has set in place resource-based zoning districts, with land use activities within each zone limited to those which are compatible with the resources and current uses there. Protection districts have been established to protect lakes, rivers, streams, important public recreational areas, historic sites, remote fishing ponds, deer winter shelter areas, coastal bird nesting islands, flood plains, high mountain areas, steep slopes, scenic areas and other unusual and fragile natural resources. Development districts include areas of existing patterns of development, where future, compatible development is encouraged. And finally, the general management zone which encompasses the bulk of the land area in LURC jurisdiction has been placed on areas which are not considered environmentally fragile. Traditional forest practices are encouraged in this zone (see figure 4).

The following tables summarize the various zones designated to date by the Commission in carrying out its program.

Protection Zones:

Wetland Zone (P-WL)	**encompasses all water bodies, as well as marshes and bogs larger than 10 acres in size.**
Great Pond Zone (P-GP)	**250 foot wide strip around all lakes and ponds greater than 10 acres in size.**
Shoreland Zone (P-SL)	**250 foot wide strip along all rivers, except for streams draining less than 50 square miles, where the shoreland zone is 75 feet wide along each bank.**
Wildlife Habitat Zone (P-FW)	**covers important deer winter shelter areas, coastal seabird nesting sites and other significant fisheries and wildlife habitat.**
High Mountain Zone (P-MA)	**covers all mountainous areas above 2,700 feet elevation.**
Recreation Zone (P-RR)	**covers areas along existing hiking trails and significant canoeing rivers as well as around unspoiled, remote fishing ponds and other areas of recreational significance.**
Fragile Soils Zone (P-SG)	**covers areas of steep slopes and unstable soils.**
Flood Plain Zone (P-FP)	**covers areas within the 100 year frequency flood.**
Aquifer Recharge Zone (P-AR)	**covers important ground water resources.**
Unusual Area Zone (P-UA)	**applied to unusually significant scenic, historic, scientific, recreational and natural areas not adequately protected by other zoning.**
Resource Plan Zone (P-RP)	**permits landowners to develop their own resource management plan for an area and, if approved by the Commission, allows land use activities in accordance with such plan.**

By statute, all development activities within the Commission's jurisdiction require a permit from the Commission, unless expressly exempted by law or by the Commission's regulations. The Commission's staff acts directly upon most applications for permits, while the Commission, assisted by recommendations of the staff, acts upon more controversial development matters as well as zoning and rule changes and the disposition of enforcement cases.

Development Zones:

Residential Development Zone (D-RS)	**covers areas around existing patterns of residential development.**
General Development Zone (D-GN)	**covers areas around existing patterns of mixed, residential and small scale, commercial development**
Commercial-Industrial Development Zone (D-CI)	**covers areas around existing patterns of major commercial or industrial development.**

Management Zone:

General Management (M-GN)	**covers the residual of LURC jurisdiction, where forest and agricultural activities are allowed and encouraged without significant restriction.**

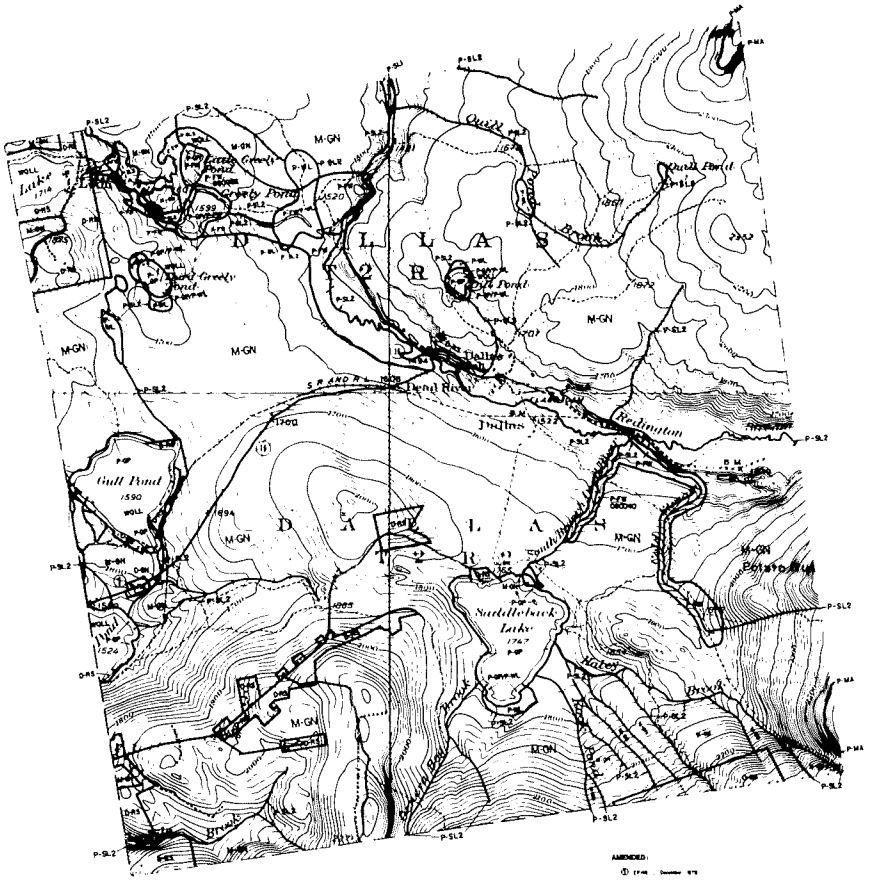


Figure 4

Land Use Guidance Map

Dallas

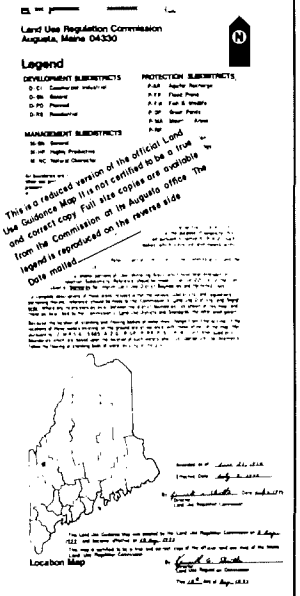
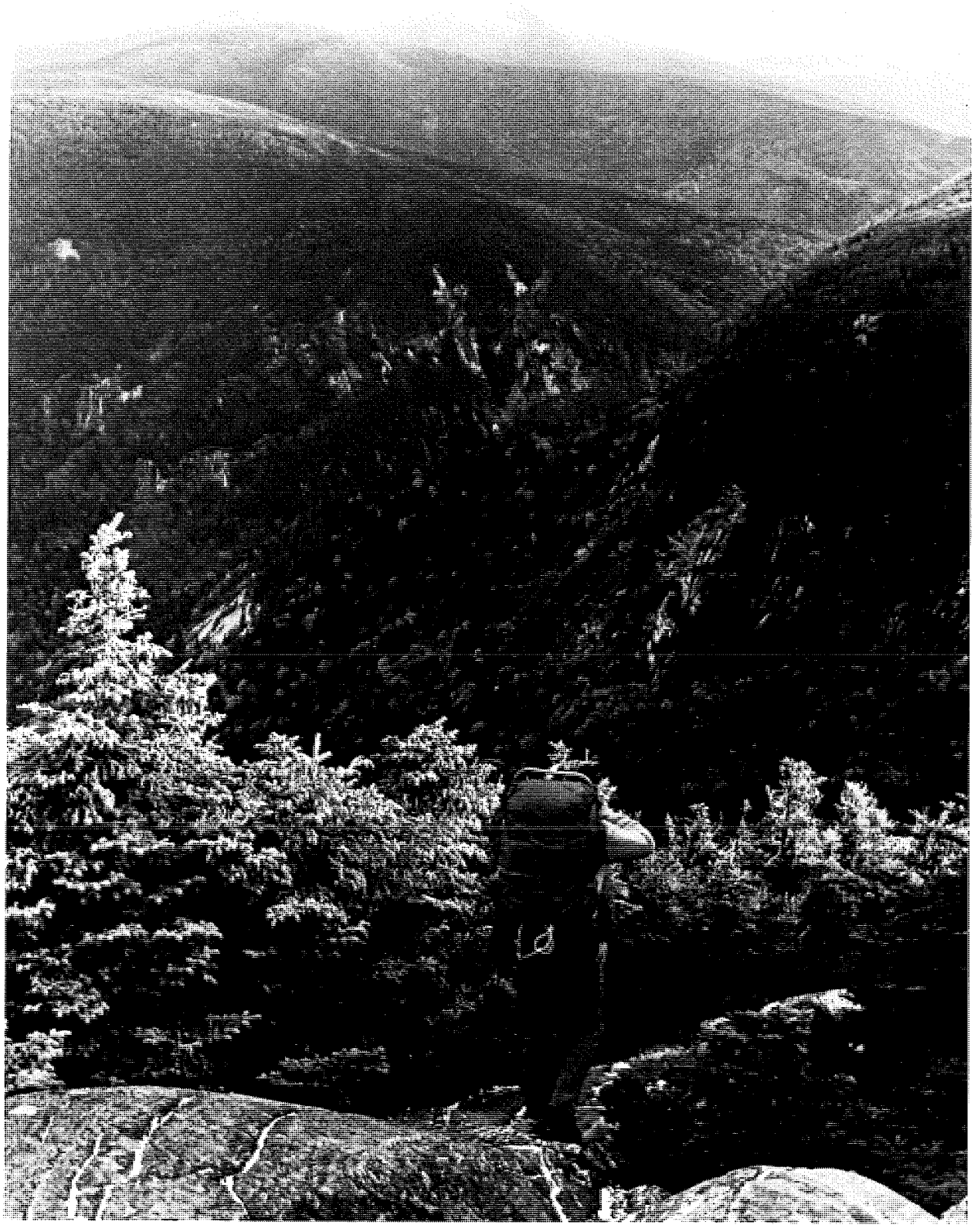


Figure 4. Protection, development, and management zones have been delineated on maps for each of the townships, plantations, and towns in the jurisdiction. This map of Dallas Plantation in Franklin County illustrates examples of zones protecting scenic, unusual, and fragile resources; development zones along roads and around lakes; and management zones, where traditional forest and farming practices are encouraged.



Accomplishments of the First Ten Years

Since its creation in 1971, the Commission has accomplished a great deal:

- In the early 1970s, a program of interim zoning was created and applied throughout the jurisdiction;
- In the mid 1970s, the first Comprehensive Land Use Plan was adopted by the Commission and approved by the Governor, thereby creating a set of guiding principles for the ensuing years of the Commission's work;
- In 1977, Land Use Districts and Standards were adopted as the Commission's guidebook for zoning and land use activities in its jurisdiction;
- In the late 1970s, permanent zoning was set in place, according to the Land Use Districts adopted by the Commission, for the entirety of the jurisdiction;
- In the late 1970s, the Commission prepared six American Planning Association award winning *Land Use Handbooks* aimed at educating the Maine public about land use planning and design;
- In the early 1980s, the Commission refined its policies, procedures, forms, and programs in response to its experience, and established a program of enforcement and education to assure a reasonable degree of compliance with environmental regulations and sound land use practices;
- Each year, the Commission has acted upon hundreds of applications for development and other land use activities, approving the vast majority with conditions to prevent environmental degradation;
- Throughout all of this, the Commission, through open public meetings and hearings, has sought and responded to input and suggestions from the public as well as the private landowners within its jurisdiction.

Now the Commission is seeking to reassess, review, and, where needed, revise the policies and procedures set out in its first Comprehensive Land Use Plan and to set a course appropriate for the land use issues and public needs of the coming years.

The purpose of this Revised Comprehensive Land Use Plan, then, is to outline those policies which are needed to protect and conserve natural and human resource values and to provide the basis for implementing these policies through land use standards and zoning. This revision updates the plan adopted in 1976 in response to new issues which have arisen over the past six years. Notable among these are the spruce budworm epidemic, the recently discovered mining potential for metals and peat, and a renewed interest in hydropower development and river conservation. Resolution of the questions posed by these and other issues is critical in determining the direction the Commission should take over the next several years.

The following chapters of this plan describe the Commission's responsibilities and the characteristics, natural resources, and land uses in the jurisdiction. Throughout these sections, various issues and problems of significance are described to provide the background data for the policy and implementation recommendations proposed in later sections of the plan.

Chapter 2

Natural Resources

Maine supports a wide variety of natural resources. There are vast forestlands, lakes, mountains, islands, and tidal and inland wetlands. Many of the most spectacular of these features are located in the unorganized areas of the State. Some features date back to earlier geologic times, while others reflect human intervention. All of them are a part of the ever-changing ecosystems which collectively comprise the State's resource base. Each natural resource has economic, recreational, and environmental values and is, therefore, often subject to conflicts in land use and resource allocation decisions.

This section describes the natural resources and their land use potential in Maine's unorganized areas.

Geological Resources

Maine's geological history is long and complex. Bedrock formations, which for the most part lie beneath the surface, are the result of over a billion years of geologic activity.

The bedrock of Maine consists of both igneous and metamorphic formations. The igneous rock formations are located in two broad belts. One extends from the Sebago Lake region north to Rangeley, then northeast to Houlton, and the other runs from an area southeast of Penobscot Bay to Eastport. Economically valuable deposits of some metals (e.g., copper, zinc, iron, gold, etc.) formed in these belts during and after the volcanic activity which molded the region 400 million years ago (see figure 5). Granite is found throughout the state and has been extensively quarried on the coastal islands.

The metamorphic rocks were originally shales, sandstones, and limestones which have been recrystallized to varying degrees at elevated temperatures and pressures. Metamorphosed shales and sandstones are the predominant bedrock type within the unorganized areas.

The bedrock geology shows the effects of several periods of intense deformation and mountain building. These periods involved folding and faulting of the earth's crust which produced fault and shear zones in the bedrock. Earthquakes occur today at some sites along the fault zones. Maine has a history of earthquake activity, though most earthquakes are too small to be felt or to do property damage.

The bedrock in the jurisdiction has been fractured and joined by widespread regional uplifting. These fractures provide pathways for percolating ground water (aquifers) which are important sources of good quality water supplies.

Today's topographic characteristics are a result of the glacial activity which occurred 10,000 to 22,000 years ago. Extensive ice

Figure 5

GEOLOGICAL RESOURCES

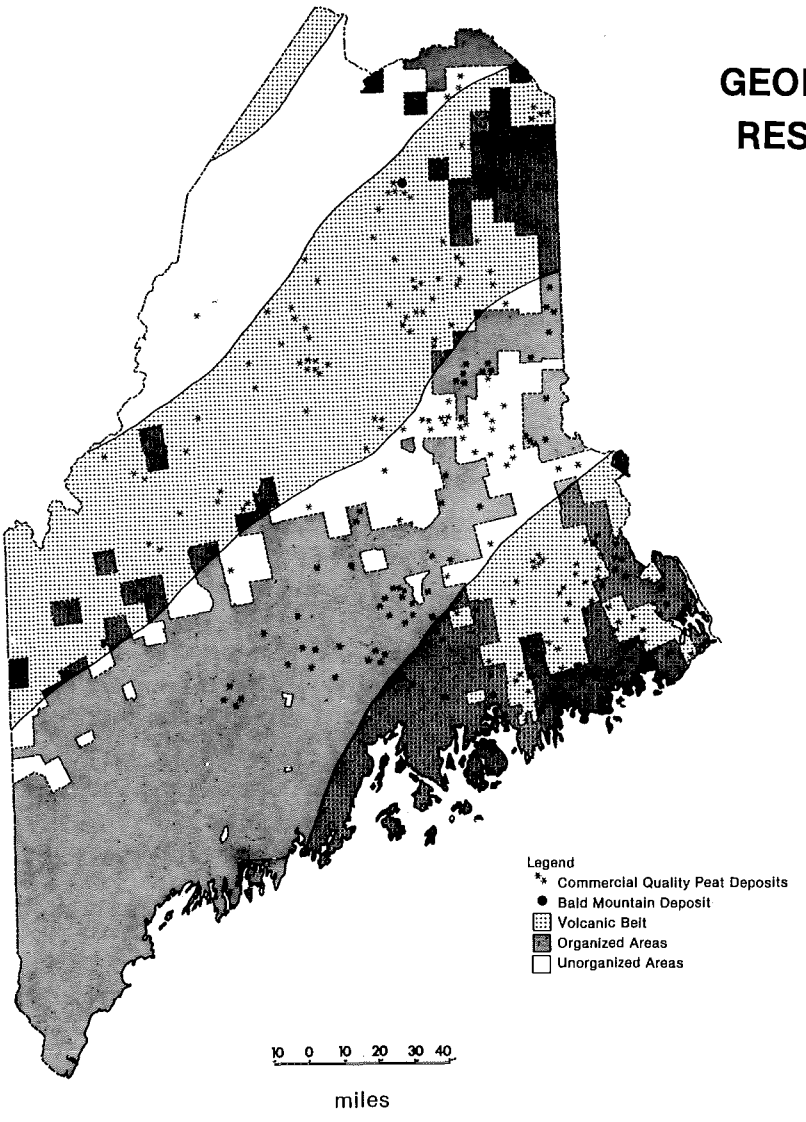


Figure 5. A variety of important geological resources are found throughout LURC jurisdiction. For example, economically valuable deposits of a number of metals, including a large copper-zinc deposit at Bald Mountain in Aroostook County, are located in two broad belts of volcanic bedrock which run through the jurisdiction. Likewise, numerous commercially valuable peat deposits, many located within the jurisdiction, have been identified. Other important geological resources, not shown on this map, include sand and gravel deposits.

Source: Maine Geological Survey, Department of Conservation.

sheets periodically covered the region during that period, reshaping the existing features of the landscape. Mountains were worn down and rounded, and valleys were scoured and filled. Lakes, river channels, and terraces were formed. Landscape formations, such as eskers, moraines, and kames, were deposited as the ice retreated. As the ice sheets melted, the sea level rose and flooded much of the land up the river valleys.

The surficial geological deposits left by the retreating glaciers and raised oceans were composed of clay, silt, sand, gravel, cobbles and boulders. Some of these deposits contain economically valuable accumulations of sand, gravel and clay. Sand and gravel, especially for road building, have long been extensively mined, and clay has been extracted on a smaller scale. Surficial deposits of sand and gravel also act as important aquifers in some parts of the state.

In sum, the bedrock and surficial geological resources of the jurisdiction have important land use values particularly as resources of mineral ores, ground water supplies, and construction materials. Furthermore, in areas of geological instability, special land use planning considerations must be given in the siting of houses, roads, dams, pipelines and other structures.

Soil Resources

The 10,300,000 acres of land within the jurisdiction have soils which are the weathering products of glacial till, glacial outwash, or marine and lake sediments mixed with decaying organic matter, air, and water. Soil formation is influenced by temperature, precipitation, presence of living organisms, type of parent material, topography, and time.

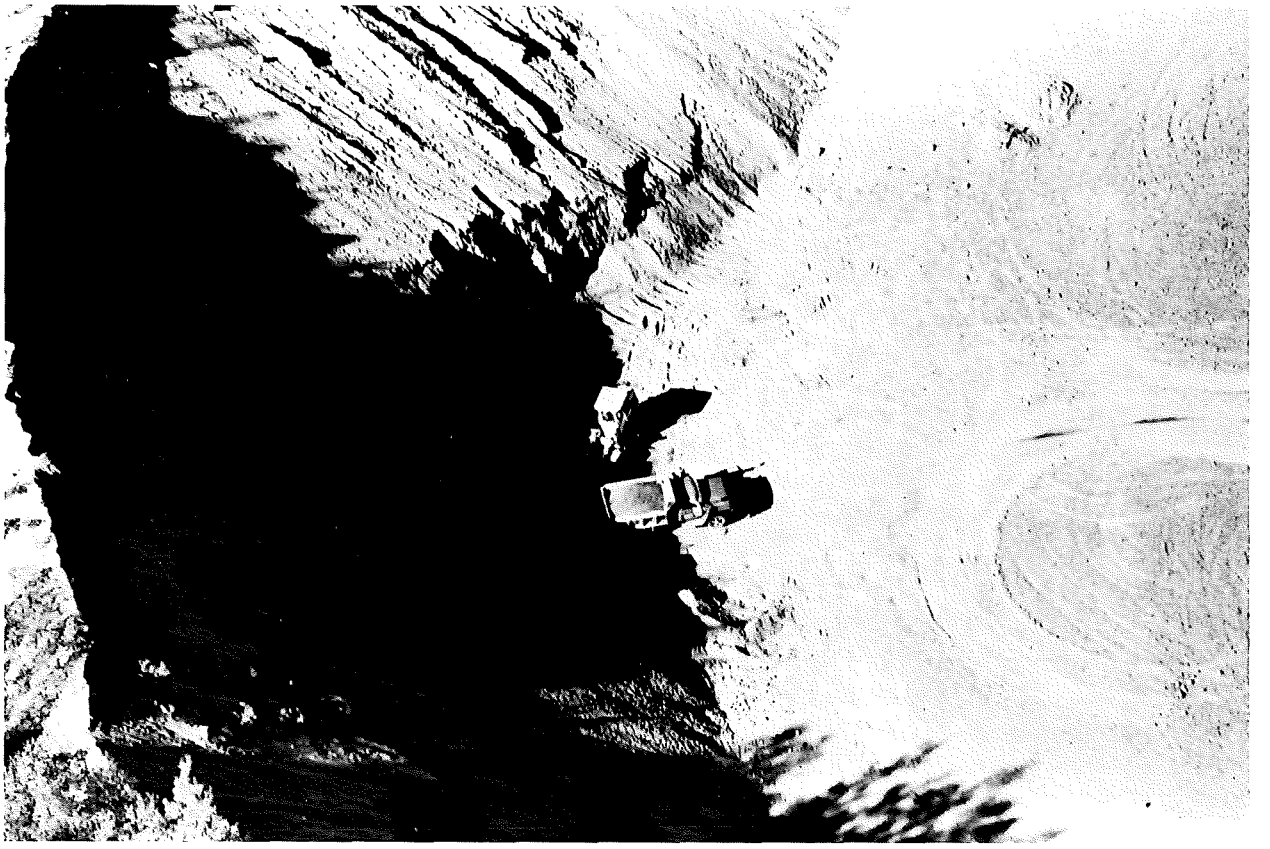
A wide variety of soil types exists in the jurisdiction, ranging from exceedingly well drained sands to very poorly drained swamps and bogs. The predominant soils are shallow, stony or sandy loams which are acidic and well to moderately-well drained. Many soil types in the jurisdiction make large areas inappropriate for many development uses.

The Soil Conservation Service is currently carrying out two types of soil surveys to more adequately describe the soils in the unorganized areas. Most of the area is being mapped with reconnaissance soil surveys. This type of survey maps soil associations by identifying and mapping 40 to 100 acres with common structural (till, outwash, etc.), textural (gravel, sand, clay, silt), and drainage characteristics. The mapping process is slow. By August 1982, nearly 700,000 acres had been surveyed, and given the current effort, the projected completion date is 1998.

A higher intensity soil survey, which maps the predominant soil type in 3 to 5 acre plots, is being undertaken on the highly productive agricultural lands in Aroostook and Penobscot Counties. Because of the general nature of the reconnaissance survey, more intensive soil mapping of particular sites is often required by forest land owners to plan road layout and to determine where it is most advantageous to plant. Similarly, site specific soil evaluation is required for building when subsurface sewage disposal is planned.

While much can be learned from soil surveys, maps, and evaluations, there are certain properties that are common to all soils. Of greatest concern is the propensity for soil to erode. Often the most easily erodable materials are the most fertile of those in the whole soil. Therefore, nutrient depleted soils are left behind by erosion. Although erosion is a natural process, it is often accelerated by human land use activities. While all soils erode, some are more fragile and erode more easily. The principal factors influencing the rate and the degree of erosion are:

- the extent to which natural vegetative cover is removed;
- the time interval between the removal of



natural cover and revegetation;

- the size of the affected area;
- the nature of the affected soil;
- the length and steepness of slopes;
- climatic factors;
- site aspect or orientation.

Water sedimentation, which is the deposition of sediments into water bodies, is a problem closely related to erosion. Unless precautions are taken to prevent soil from being discharged into surface waters, erosion may result in sedimentation of these waters.

Sedimentation has several harmful effects. It reduces the storage capacity of water courses, thereby increasing flood heights and flood damage. Sediments can harm fish and aquatic life by covering spawning grounds and reducing dissolved oxygen levels. They contribute quantities of plant nutrients to surface waters, thus contributing to eutrophication. Sediments can carry large quantities of biological agents and chemicals which, when released into water, can harm public health, fish spawning, and other aquatic life. Sedimentation is often unattractive and reduces the recreational and aesthetic value of water bodies.

Measures can be taken to reduce soil erosion and sedimentation problems. For example, land use planning and zoning can guide development away from unsuitable areas, and land treatment and structural measures can minimize erosion and help prevent sediments from entering surface waters.

Major sedimentation problems in the Commission's jurisdiction are often associated with roads, particularly inadequately designed logging roads. For this reason, the Commission, in its regulatory, education and enforcement programs, provides implementation recommendations which encourage sound road building and maintenance practices in order to minimize erosion and water sedimentation.

Water Resources

The Land Use Regulation Commission is charged by law with the responsibility "to prevent the despoliation, pollution and inappropriate use of the water" in the unorganized areas of Maine. Most of Maine's rivers and water supplies have their sources in the unorganized areas. Therefore, the Commission has the duty to insure high quality water resources for major portions of the State. This water is valuable for drinking, for crops, for commerce and industry, and as a resource for recreation and energy.

Water Quality

The quality of water determines its value and usefulness as a resource. Water quality is threatened by sedimentation, nutrient enrichment, and deposition of various liquids and solids. All water bodies are susceptible to the damage caused by pollution.

Since timber harvesting and related activities are by far the major land use activity taking place in the jurisdiction, they are also the major contributors to water quality degradation.

The total removal of trees along a stream can result in as much as a 15 degree Fahrenheit rise in temperature due to loss of shade. The resulting warm temperatures may exceed tolerance limits for trout, salmon, and other aquatic species by disrupting feeding, increasing disease, and reducing oxygen levels. Temperature increases are minimized by adhering to standards which require maintaining tree cover along lakes and streams.

Logging operations can cause direct alterations to stream channels. Bridge and road construction, cross stream skidding, and slash (tops, limbs, and cull trees) left in stream channels can degrade water quality. These activities increase turbidity and sedimentation, can deflect stream channels, cause channel scouring, and even create barriers to fish migration. The effects of road construction can be minimized if regulations in the Commission's protection districts and road guidelines in the Commission's *Land Use Handbook* Section 6, "Erosion Control on Logging Jobs" are closely followed.

Two studies by the Commission of selected active and inactive harvesting sites found significant erosion and sedimentation problems occurring on roughly 20% of all inactive sites and over 50% of active sites. Sedimentation problems persisted for several years on 1 out of 16 inactive sites. Both studies showed that sedimentation occurred most frequently when heavy equipment was operated close to streams without adequate erosion control measures. The most recent study showed that erosion and sedimentation problems were more likely to develop at sites operated by contractors than at those where the land owner/manager was responsible. The conclusions of these studies are reflected in the policies and directions for implementation stated later in this Plan.

Artificial nutrient enrichment (accelerated release of nutrient loads) results in the increased growth of weeds and algae and the consequent lowering of water quality — for drinking, recreation, and fish and wildlife habitat. While this can be a problem in heavily cut areas adjacent to water bodies, a study conducted by the Commission and the Department of Environmental Protection indicated that nutrient enrichment in lakes in the jurisdiction resulted primarily from agricultural and development activities and to a lesser extent from timber harvesting. Agricultural sediments pose potential water quality problems since they carry large amounts of nitrogen, phosphorous, plant nutrients, and other agricultural chemicals, including pesticides and fertilizers.

Land development related discharges such as road salts, oil, fertilizers, and chemicals are carried in surface runoff and deposited in surface waters. Subsurface percolation from septic systems and contaminated ground waters can contribute nutrients to water supplies.

Water quality is also affected by foreign

materials deposited in water bodies. Saw milling, pulp and paper making, road building, timber harvesting, oil spills, sewage treatment plant effluent, and various solid waste depositions can affect water quality.

The Commission has instituted and will continue to improve and refine, as necessary, harvesting, road construction, and development standards aimed at preserving high water quality within the jurisdiction.

Lakes

Roughly 3400 ponds and lakes, one acre or more in size, exist in the unorganized areas of Maine. They cover more than 656,000 acres, or about six percent, of the Commission's jurisdiction. Fourteen of Maine's fifteen largest lakes are wholly or partially within the area.

Lakes and ponds are often static and display generally slower flushing rates and stratification than rivers and streams. Development activities that increase levels of sedimentation, nutrient enrichment, and deposition of solids can, therefore, be more harmful to aquatic life in standing than flowing bodies of water simply because they take longer to flush or cleanse themselves.

Eutrophication is the natural aging process of a lake or pond. Young lakes, also called oligotrophic lakes, are characterized by having low dissolved nutrients and abundant oxygen and are usually deeper, clearer, and colder than older lakes. Oligotrophic lakes often contain cold water fish such as salmon and trout. Old lakes, also called eutrophic lakes, have a high nutrient concentration but low oxygen content. The water may sometimes become green or brown due to the great number of microorganisms present. Some fish, bass and pickerel for example, can exist in these eutrophic lakes because they can live in waters with high temperatures and lower dissolved oxygen. But many cold water fish species important for recreational purposes cannot survive in eutrophic lakes.

Human activities have speeded up this natural aging process in many lakes. This is known as cultural eutrophication. The increase in nutrients stimulates the rapid growth of phytoplankton, which in turn upsets the food chain. Fish that normally feed on these microscopic plants are unable to consume this excess, so it sinks to the bottom where the decomposers are found. The decomposers, also unable to utilize the excess material, are virtually smothered by it. This excess material creates sediments that start to build up along the bottom. The bacteria that break down these sediments release a harmful gas, hydrogen sulfide, that can poison organisms found in the lake. The breakdown process uses oxygen and results in oxygen depletion which can also reduce fish populations.

Lakes are one of the most important recreational resources in the jurisdiction. They are under pressure to provide a wide range of recreational opportunities including camp lot development, remote pond fishing, and wilderness camping. The Commission, concerned that a range of recreational opportunities important to Maine people be available in the future, has responded to these pressures in the following ways.

With the assistance of the Department of Inland Fisheries and Wildlife, the Commission has identified and zoned for protection some 175 remote ponds. These are substantially undeveloped ponds having a significant cold water fishery, no two-wheel drive road access within ½ mile, and no significant development. The Commission's Land Use Standards protect the important primitive recreational opportunities that these lakes provide by creating a ½ mile, development-free protection zone around these ponds, within which traditional land management activities, while not prohibited, must be carried out in a way that does not destroy these unique and fragile areas.

There are an additional 200 lakes within the jurisdiction which have no significant development and no two-wheel drive access within ½ mile, but which do not currently qualify as zoned remote ponds because they have no significant cold water fishery. While these lakes do not have special zoning designation at this time, given the rapidly expanding logging road network and the scarcity of lakes not having two-wheel drive access, the Com-

mission is considering some form of protective zoning for some or all of these lakes to preserve their primitive recreational value. This is for the purpose of assuring that a wide range of lake opportunities and experiences will be available in the future.

One thousand of the lakes in the jurisdiction have been informally designated by the Commission as water quality limiting lakes (WQLL). Full development on these lakes could potentially increase the phosphorous concentration to unacceptable levels. When development is proposed on one of these lakes, the application receives special attention and a determination is made whether additional protective standards need to be applied to protect the lake's water quality. Roughly 25 lakeshore development applications have received such special consideration to date, and more protective measures have been recommended for seven of them. Because it is recognized that the current formula used for determining water quality limiting lakes is rudimentary and does not handle all variables well enough, a new methodology is being developed and applied experimentally to sample lakes in the jurisdiction to better define which lakes may be in need of this higher degree of protection.

The aesthetic and water quality values of most lakes are protected by harvesting standards which call for volume removal limitations within 250 feet of lakes, road building standards which call for water control measures, and development standards which require a minimum 75 foot setback from the shoreline for buildings and a minimum lot size designed to insure adequate sewage disposal.

Rivers and Streams

The jurisdiction is noted for having a wealth of rivers and streams. One can travel in some places only a relatively short distance without crossing one. Five major rivers — Saint John, Penobscot, St. Croix, Kennebec, and Androscoggin — drain the unorganized areas and are fed by more than 90 major stream tributaries and countless brooks.

Maine's rivers have always been important to the state's economy as well as its recreational values. They were used for travel by Native Americans, European settlers, and 19th century tourists. Millions of logs were floated down the Penobscot, the Kennebec and the Androscoggin during the annual spring log drives. Several of the rivers provide spawning grounds for trout, salmon, and other important game fish. The jurisdiction is a popular place for people from all over the Northeast to fish. Other recreational opportunities include canoeing, particularly white water canoeing, and rafting.

The state's only federally-listed endangered plant species, the Furbish lousewort, is located in the jurisdiction on the steep, north-facing riverbanks of the St. John. Three other plant species, which are under review for endangered/threatened status, grow along streams or rivers in the jurisdiction. These are the auricled twayblade, St. John oxytrope, and New England violet.

While there is generally less residential development on rivers than lakes, such pressures do exist on the more popular recreational rivers. However, properly sited residential developments may not unduly diminish the recreational and natural values that rivers possess.

There is also significant hydropower and related development on a few of the rivers in the Commission's jurisdiction and a strong, new interest in hydropower development on many. Unfortunately, the best hydropower sites are often the best sites for other purposes and may conflict with the other resource values that some rivers present, namely, recreation, scenic area preservation, and fisheries. The Army Corps of Engineers and the New England River Basins Commission have inventoried the state's current and developable dam sites and determined where conflicts may be expected. Potential conflicts are predicted on over half of the existing sites and nearly all of the undeveloped sites.

The Commission has already protected some important recreational river stretches from incompatible development:

- About 100 miles of the St. John River are protected with a Resource Protection (P-RP) zone, pursuant to a plan by which new residential and commercial development, subdivisions, and dams are all prohibited. Timber harvesting and road and bridge construction are restricted, and non-intensive recreational use is to be managed by a consortium of landowners.
- More than 65 miles of the Penobscot River, as well as 12 miles of Lobster Lake and Stream, are protected under another P-RP zone, pursuant to a resource plan which prohibits new commercial and residential uses and subdivisions, limits dam development to one potential site (subject to permit approval), and restricts harvesting and road and bridge construction.
- More than 30 additional miles of the Penobscot River, 43 miles of the Allagash River, 12 miles of the Lower Dead River and 22 miles of the Moose River are protected under Recreational Resource (P-RR) zoning, in which new commercial and residential uses and dams are prohibited and timber harvesting and road building are regulated.

The 1981 State Energy Policy recommended developing hydropower on all sites where the advantages of a facility outweigh the adverse impacts. However, recognizing that once a site is developed for hydropower the resource is permanently altered, this Policy directed the Department of Conservation to work with environmental, economic, energy, and other appropriate interests to identify river stretches in the state that provide unique recreational opportunities or natural values and to develop a strategy for the protection of

Figure 6

Water Resources

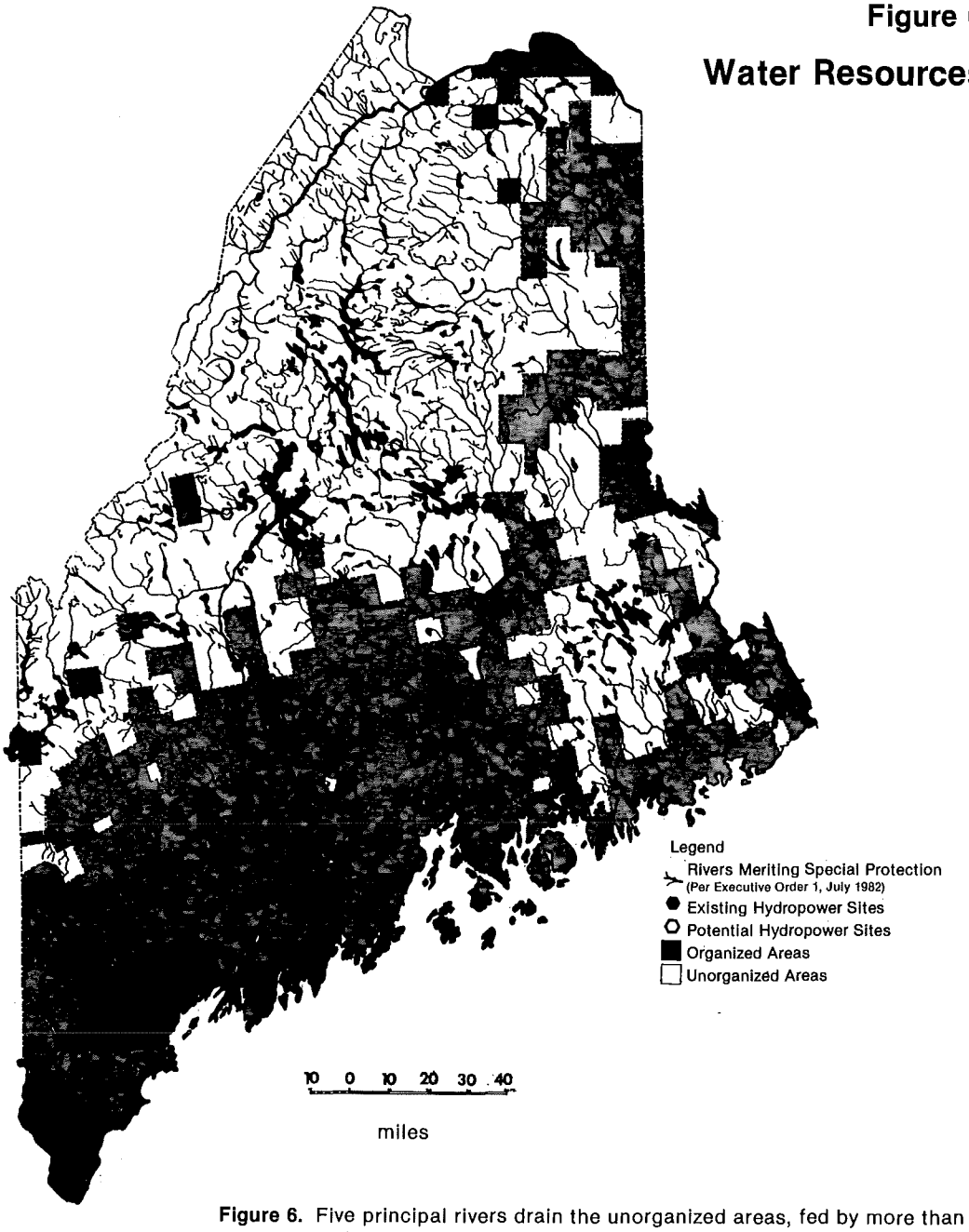


Figure 6. Five principal rivers drain the unorganized areas, fed by more than 90 major tributaries, and countless brooks. In addition, there are approximately 3,400 lakes and ponds in LURC jurisdiction. River and tributary stretches having recreational and natural values of the highest significance have been recommended as meriting special protection in a gubernatorial executive order (July, 1982). These are highlighted on the map. Also shown are existing hydropower sites and those potential hydropower sites within LURC jurisdiction which are currently being studied.

Source: Executive Order 1, Maine Rivers Policy, July 1982; Maine Office of Energy Resources; Maine Department of Environmental Protection

these areas. To make this determination, the Maine Rivers Study, carried out by the Department of Conservation with assistance from the National Park Service, comprehensively inventoried and assessed 32,000 miles of the State's streams and rivers. Resource assessments were undertaken which classified over one thousand miles of these as "A" Rivers of highest significance, because they possess a variety of unique and/or outstanding recreational or natural values of greater than state significance. Nearly 760 miles of these "A" rivers lie in LURC jurisdiction. In addition, the Study classified several hundred miles of rivers and tributaries as "B", having natural and recreational values with outstanding statewide significance.

Major findings of the Maine Rivers Study which are of particular significance to the Commission's work are as follows:

- Maine is unique in the Northeastern United States in the number and diversity of significant natural and recreational river resources that it possesses, including:

  river gorges, waterfalls and white water rapids identified as being outstanding geological or hydrological features;

  more miles of undeveloped free-flowing rivers than any other state in the Northeast, including particularly significant undeveloped stretches along the Allagash, Aroostook, East Machias, Machias, Penobscot, Pleasant, St. Croix, and St. John systems;

  river corridor segments which provide habitat for diverse populations of rare and endangered plant species;

  famous Atlantic and landlocked salmon, trout and other game fisheries; and

  significant white water, back country, and other canoeing and rafting experiences.

- The potential exists in Maine for the conservation of complete watershed or river ecosystems, an opportunity paralleled by few if any states in the Northeast, and including such riverine systems as exist along the St. John, Penobscot, Allagash, Aroostook, Big Machias, Machias and Fish Rivers, all or parts of which are in the Commission's jurisdiction.
- Potential conflicts exist between hydropower development and significant natural and recreational river values.
- There is a significant base of citizen and public agency support for the conservation and sound management of the river resources in Maine. While these interests vary and sometimes conflict, an underlying consensus exists that rivers in their natural condition constitute a valuable resource to the State. There also appears to be general consensus among river interests regarding which rivers are most important and warrant conservation action.
- Agencies such as the Land Use Regulation Commission should play a role in protecting the major natural and recreational river values identified in the Study.

Following publication of the Maine Rivers Study, the Governor issued an executive order establishing as executive policy the protection of the rivers set forth in the order (substantially the "A" classified rivers) and urging independent regulatory agencies, such as LURC, to take action consistent with that policy.

The Commission has responded by amending its rules to make it clear that the river and stream segments within the jurisdiction identified in the Governor's executive order as meriting special protection expressly qualify for Recreation Protection (P-RR) zoning. Water impoundments and commercial and residential development are prohibited in the P-RR subdistrict, making this zone a particularly appropriate one to carry out these policies.

The rule change adopted by the Commission and approved by the Legislature is based upon the Commission's enabling statute, its stated goal of protecting significant natural

and recreational river resources, the Maine Rivers Study, and the Executive Order on Maine Rivers Policy. It is consistent, therefore, with both the Commission's legislative mandate and the policies of the executive branch. The amendment provides a solid foundation for future action by the Commission to apply, as appropriate, protection zones to river resources of documented importance.

Major hydropower development may be permitted on sites not zoned for special protection (see figure 6). In these cases, an application to construct major dams for power generation and/or water storage purposes must receive a permit from the Commission. The Commission, in cooperation with the Departments of Environmental Protection and Inland Fisheries and Wildlife, has recently designed a new application form for major dam projects. This form requires a detailed description of the existing level of development on the site, proposed site developments plans, and environmental reports tailored to the scope of the project. For projects in the jurisdiction requiring review by more than one agency, the Commission will implement the one-stop permitting process to coordinate agency responses to such applications. Because of the enormous variety of issues potentially posed by hydropower projects, depending upon their scope and environmental setting, the Commission will encourage project developers to meet with Commission and other agency staffs early in preparation of project plans so as to focus and coordinate review on the particular environmental issues which are of most relevance.

Flood Prone Areas

Maine's climate provides conditions conducive to flooding, especially in late winter and early spring. Spring rains, coupled with snow melt, often produce severe flooding. Ice buildup in lakes and rivers adds a complicating factor to the situation as ice jams often obstruct water flows. When these jams break, devastation can occur.

For purposes of delineating flood prone areas and establishing appropriate land protection strategies, the Commission uses the one hundred year flood plain. This is the area in which flooding is normally expected to occur once in one hundred years, or where there is a one percent chance of being flooded in any given year.

The identification and protection of flood prone areas is necessary to protect landowners and developers as well as to conserve areas for forestry, agriculture, and recreation. Poorly conceived uses of flood prone areas contribute to damage caused by floods and can result in severe economic losses for individual landowners and the public in general. Clearing of vegetation and paving of upland areas can aggravate the problem by increasing the rate of runoff. Bridges, structures, and other artificial obstructions in the flood prone area can impede water and ice flow. Demolished structures may then contribute hazardous debris and pollution downstream. The cumulative effect of many small structures in the flood prone area reduces its storage capacity. On the other hand, keeping flood prone areas in their natural condition augments the normal carrying capacity of a river channel and provides a temporary storage area for flood waters.

Flood prone areas within the Commission's jurisdiction are largely undeveloped. The Commission has designated a Flood Prone Protection (P-FP) subdistrict that prohibits most forms of building in these areas, since such preventive controls are far more effective and less expensive than after-the-fact protection such as flood walls and dams. The restrictions in this subdistrict comply with an agreement between the Commission and the Federal Emergency Management Agency (FEMA) that requires that building development be limited in this way so that flood insurance can be made available to persons within the jurisdiction.

Drinking Water

The Commission is concerned with the availability of good quality drinking water from both surface and ground water sources. Ground water is an especially important source of drinking water supplies in Maine. Surficial deposits of sand and gravel and fractured

bedrock serve as aquifers to provide pathways and storage for percolating ground water. In addition, recharge areas, which are often wetlands, bogs and kettle holes, collect precipitation and surface water and carry these waters to the aquifers as replenishment. Depletion or pollution of an aquifer or its recharge area is a long term problem with no immediate remedy.

Types of development that place too high a demand on an aquifier, that seriously reduce its ability to recharge, or that may pollute it should be prevented. Recognizing that, the Commission has created an Aquifer Protection (P-AR) subdistrict which limits development of potentially polluting activities on aquifers which are currently in use or anticipated to be used for public, industrial, or agricultural purposes. However, the application of this zone, as it is currently described in the standards, has proven problematical because aquifers and related bedrock conditions have not been well identified in the jurisdiction. The Commission is considering changes in this zone to make it more adaptable to the level of information available for the jurisdiction.

The high quality of many of the jurisdiction's surface waters is further protected by development and harvesting standards applicable to all the Commission's zones along lakes, rivers, and streams.

Wetland Resources

Both inland and coastal wetlands are common within the jurisdiction. For the purpose of this document, wetlands are defined as land where the water table is at, near, or above land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes. Where no vegetation is present, wetlands are recognized by the presence of surface water or seasonally saturated substrate and proximity to vegetated wetlands or deep-water habitats. This discussion does not include descriptions of lake, stream, and pond bottoms which are also zoned by LURC as wetlands.

Wetland areas typically include marshes, bogs, wet meadows, swamps, heaths, peatlands, and fens and are recognized as being among the most fragile of ecosystsms. They offer a range of wildlife and vegetation types, providing habitats for numerous species including some that are rare in Maine, New England, and in some cases, North America. Wetlands support beautiful orchids, blueberries, cranberries and in some instances commercially valuable timber such as cedar and black spruce. Wetlands also provide breeding, feeding, nesting and resting areas for a variety of birds, fish, insects, reptiles, amphibians, and mammals. This range of flora and fauna offers opportunities for hunting, fishing, trapping, photography, and nature appreciation.

Wetlands can help reduce flood damage by storing water during times of peak water input and can purify water by filtering suspended sediments and absorbing nutrients and heavy metals.

Some of the wetlands in Maine have soils composed of 75% or more partially decayed and disintegrated plants, and therefore qualify as peatlands. Many peatlands are found within the jurisdiction in a band that crosses from Washington County to Northwest Somerset County (see figure 5).

Maine has numerous types of peat and peatlands. The properties and composition of peat vary considerably in different deposits and even in different parts of the same deposit because peat is derived from different types of vegetation and is accumulated and preserved under varying conditions. Some peatland types are unique to the Eastern United States, and

others lie astride a major transition between southern and northern biogeographical regions and support an unusual range of plant and animal communities.

A high hydrogen and low oxygen environment slows down decomposition tremendously. As a result, artifacts, pollen, and plant and animal remains are found in peat and are used to reconstruct the climate, vegetation, and human activities dating back as much as 8-10,000 years.

Peatlands also offer important economic values. While on a relatively small scale some peat in the jurisdiction is harvested for horticultural and agricultural purposes, and timber harvesting is conducted on a few peatlands, interest is rapidly mounting to mine peat for energy purposes. Pulp and paper companies are inventorying their peatlands and carrying out studies to determine the feasibility of using peat as an industrial fuel. At the same time several other companies have been investigating the feasibility of producing peat fuels for both industrial and residential markets.

Although acreage estimates for the state and jurisdiction vary tremendously, a recent survey by the Maine and United States Geological Surveys estimated that there are, at minimum, 35,000 acres of commercially valuable peat usable for energy purposes within the jurisdiction.

Because there are a number of potential uses for peat and because peatlands are, for practical purposes, non-renewable and are often extremely fragile, there are many competing interests regarding peat extraction. A report issued by the Maine Department of Agriculture, Food, and Rural Resources has raised concerns that the agricultural possibilities offered by peat not be lost or severely diminished, particularly as development for energy purposes is pursued. A recent report prepared for the Critical Areas Program of the State Planning Office has proposed a classification based on peatland types in order to be able to identify those with unusual natural values that deserve preservation. In 1982, a peatland subcommittee of the Land and Water Resources Council developed criteria and recommended a process to screen some 250 economically valuable peatlands statewide in order to identify those which are unique or unusual ecologically and therefore deserve protection from development.

The Commission, recognizing the economic and energy values of the jurisdiction's peat resource, is concerned about the effects that mining could have on botanical and wildlife communities, hydrological functions, and other ecological and cultural values. Since there has been limited experience with peat extraction in Maine, there are a number of unanswered questions concerning the environmental effects resulting from extraction. The Commission is committed to protecting the resource for a variety of development and non-development uses as appropriate to each peatland. To this end, the Institute of Quaternary Studies, University of Maine at Orono, is conducting a broad based survey for the Commission of certain ecological values of a number of peatlands within the jurisdiction. The purpose of the study is to assess and rank ecological values of peatlands in order to provide prospective developers guidance as to which peatlands may be most appropriately considered for development and which should be protected from development. This study, due for completion in 1983, is designed to offer preliminary information and should be supplemented by subsequent studies of additional peatlands and peatland values.

Meanwhile, the Commission has developed a new peatland and mining application form, setting forth in detail the types of information which will be required in reviewing a specific development proposal. Such information would cover the following subjects: hydrology, fisheries and wildlife, morphological and botanical features, recreational, scientific, cultural and educational values, as well as air quality impacts. On a case by case basis, the Commission will determine, based upon such information, whether a particular development proposal is suitable. Further, in order to preserve any potential archaeological resources of the jurisdiction's peatlands, all peat development applications will be sent to the Maine Historic Preservation Commission for review and comment.

Forest Resources

With 90% of the land in forest, Maine is the most heavily forested state in the nation. The Commission's jurisdiction is even more densely forested than the state as whole; nearly 95% of the unorganized area is in forest cover (see figure 7). The dominant forest type is composed of softwoods and includes white pine, cedar, hemlock, spruce and fir. Spruce and fir represent the major, commercially harvested species. Hardwoods, primarily maple, beech, and birch represent most of the remaining species. The vastness of its forestland makes the jurisdiction the wild, remote, isolated place for which it is so well known. The forests offer a variety of opportunities and values, notably timber harvesting, recreation, energy production, wildlife habitat, and watershed protection.

Timber Harvesting

Timber harvesting, first for lumber, and later for pulp and paper production, has long been the major use of the state's forests and will likely continue to be the most significant sector of the state's economy. According to the 1982 Maine State Action Plan of the Council of State Governments, wood industries account for nearly 33% of Maine's manufacturing jobs and contribute 1 billion dollars to the Gross State Product. This forest product economy relies heavily upon wood coming from LURC's jurisdiction. The extensive use of wood makes it clear that a vigorious and healthy forest is critical to the well being of Maine's economy.

Yet, in the estimation of many experts, Maine's commercial forests are not in good shape. For centuries there was a surplus of wood, with forest growth exceeding cut for most species. Forest management reflected the presence of a wood surplus. Nature took care of the forest and wood was harvested as needed.

Now the picture is changing. The forests are under increasing pressure. With the Northwestern states reaching the limits of their supply capacity, the U.S. Forest Service predicts large increases in the demand for wood products from New England's forests over the next fifty years. This output could double the state's current harvest.

At the same time, early results from the 1980 U.S. Forest Service decennial forest survey for Maine indicate that cutting is exceeding growth for many important species. In the spruce-fir forest, growing stock inventory appears to have peaked in the late nineteen seventies. Primarily natural causes, but also cutting practices, are responsible for this trend:

- The spruce budworm infestation has devastated many stands of fir and spruce. Budworm hazard threatens 5 million of the 8 million acres in the spruce-fir forest, and the epidemic is expected to continue. While insecticide treatments have reduced outright mortality in most sprayed areas, the stress caused by the infestation has slowed growth considerably. In recent years, insecticide applications have been reduced for ecological, health, and economic reasons to an average of one million acres/year (from an average of two million acres/year in the late seventies). While there has been an increase in the use of *Bacillus thuringiensis (Bt),* a biological insecticide used because of its apparent environmental and health safety, the overall reduction of areas sprayed has resulted in additional growth depression and mortality in the spruce-fir forest.
- The spruce budworm epidemic of 1912-20 caused an unbalanced age class structure that persists in today's forest. Today's preponderance of mature fir became established following that outbreak. Fir is a shortlived species and, at maturity, is susceptible to a number of killing forces. Even without the budworm, much of the fir inventory would be dying at this time.
- Although spruce and fir are used primarily for pulpwood, the harvest of which has not changed significantly in the past decade (3,220,875 cords in 1970 to 3,368,344 cords in 1980), there has been a dramatic upswing in lumber production. Domestic spruce-fir sawlog production has nearly quadrupled over the past ten years (up from 84 million board feet in 1970 to 318 MBF in 1980).*

A preliminary Maine Forest Service spruce-fir supply analysis predicts a serious wood shortfall in the middle of the second decade of the 21st century given the current level of protection and harvesting. This model indicates that while the current protection program has the short term value of keeping many trees alive long enough to be harvested and the long run benefit of improving the age class balance, it cannot, by itself, prevent a wood shortage. The analysis further indicates that the inventory can be sufficiently stretched out for the current supply to last until the regenerating forest comes to merchantable size given two conditions: (1) by reducing the harvesting pressures (either directly by decreasing the harvest or indirectly by changing tree utilization), or (2) by increasing the investment to improve the productivity of the forest.

Figure 7

GENERAL FOREST TYPES

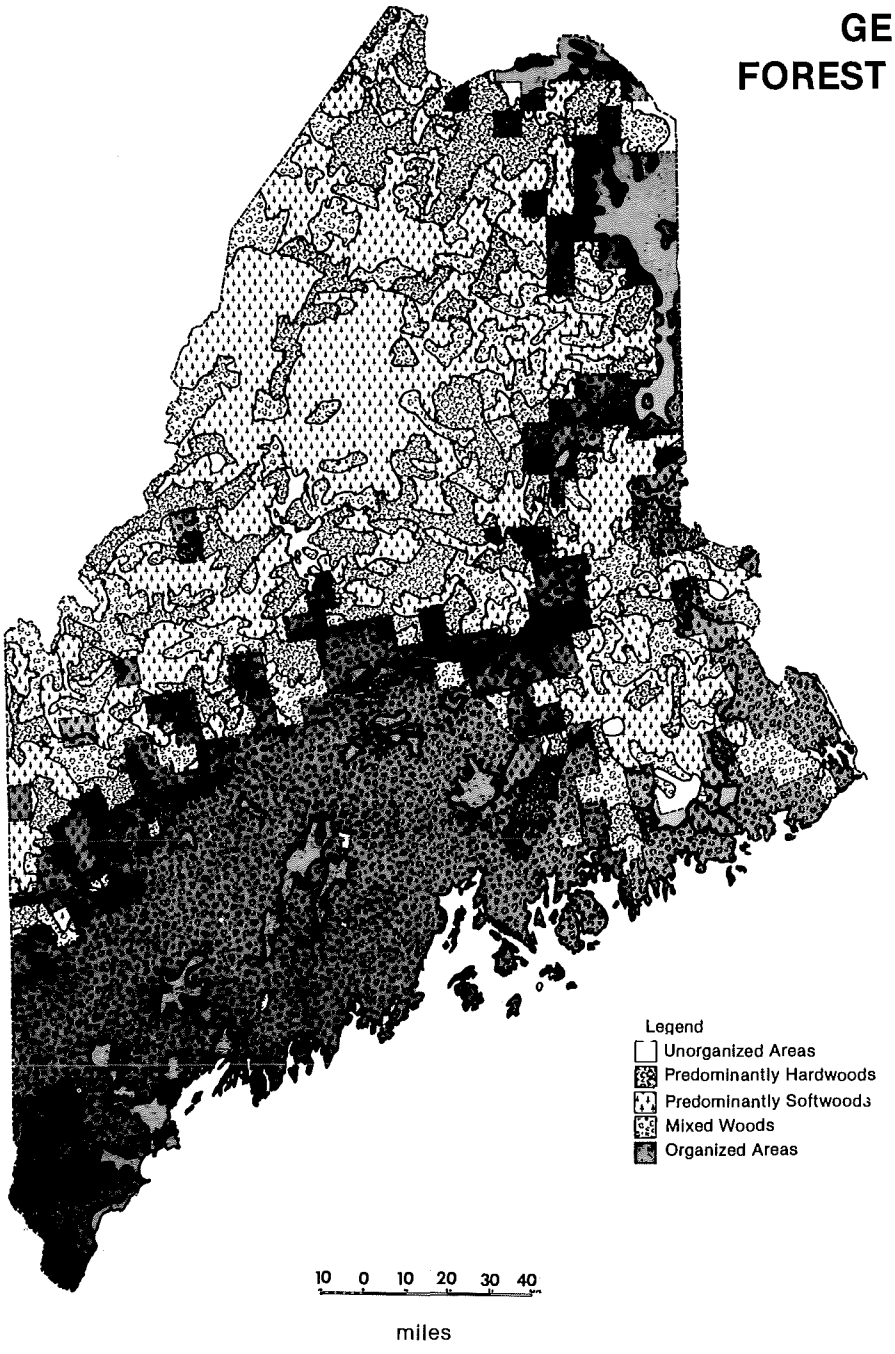


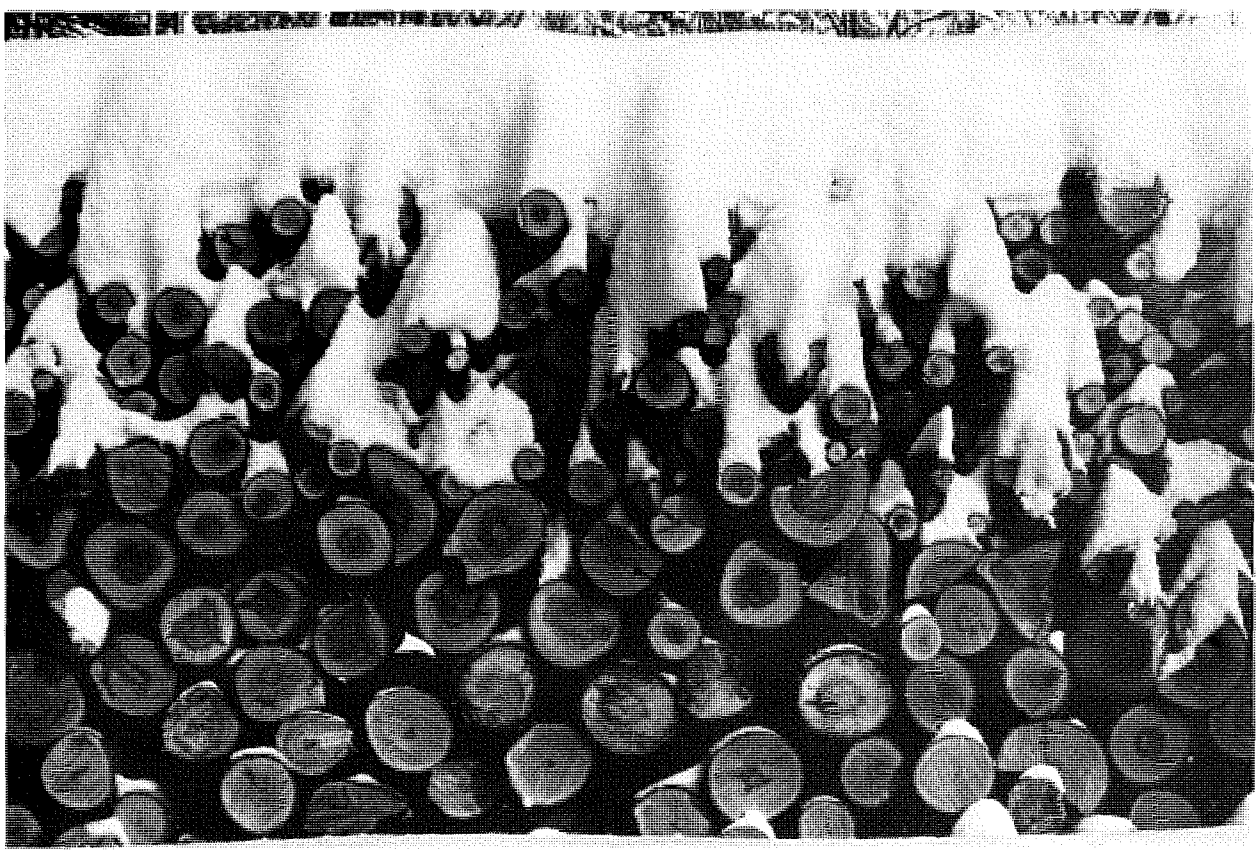
Figure 7. Nearly 95% of the unorganized areas are covered by forests, with softwoods composed primarily of spruce and fir representing the dominant forest species. This is the vast forestland for which the jurisdiction is well known.

Source: Maine State Planning Office, Maine Land Cover Map, 1980, based primarily on LANDSAT imagery from 1972-1976.

The remaining tree species in the jurisdiction are less intensively managed and utilized at this time than spruce and fir. The mixedwood and hardwood forests are sometimes degraded as they are culled for logs. On the other hand, some low grade softwoods and previously undesirable hardwoods are beginning to be used for composition-type boards and fuel. However, while these demands are increasing, it is expected that these forest species will remain underutilized in the more remote unorganized areas.

This means that Maine's forests can only meet future demands through forest management and utilization changes. According to forest landowners, more investment in forest management is needed not only to increase the growth rates but merely to sustain the current rate of cutting.

Changes in forest management and use are evident throughout the jurisdiction, but the majority of the harvesting effort is now being directed at budworm damaged or susceptible stands. In such stands, some landowners are employing integrated pest management (IPM) strategies. These include targeting harvesting to dying and threatened fir and spruce. This has resulted in many new requests to the Commission to cut more heavily than allowed by standards in infested deer wintering areas and near waterways where insecticides are not applied, as well as more clearcutting and an accelerated road building program. Still, tens of thousands of acres of dead trees remain. In addition, management plans of the major forestry companies affected by budworm suggest an increase in precommercial thinning and release by both cutting and herbicide application, and more site preparation and planting. These management strategies are employed on only a small portion of the acreage harvested each year, but they represent what is expected to be a trend toward more intensive management of the spruce-fir forest resources.



Forest Technology

Mechanization of harvesting operations is increasing. While the chain saw continues to be the primary tool for felling, delimbing, and bucking trees, felling shears and delimbers are being used more frequently. They are used primarily for small diameter trees when labor costs would be high and safety questionable. Mechanical buckers are available and used for both pulp and saw logs.

Rubber-tired skidders are most often used to yard wood to the roadside, yet there is increased use of both larger and smaller equipment. More horses, oxen, and 4-wheel drive tractors with light winches are seen in the woods as well as wood forwarders which can carry wood directly from the stump to the roadside. Forwarders are often used in areas with small diameter trees. Cable yarding systems that minimize ground disturbance, erosion, and damage to residual stands are being tested on both steep slopes and wetlands.

Some of the large machinery can shorten the harvesting time by cutting, delimbing, stacking, or forwarding up to sixteen cords of wood per trip.

Efforts are underway to expand the economic potential of Maine's forests. The use of whole tree chippers is increasing. These machines are set up in the woods and produce chips of pulp and waste wood fuel. Some mills are shifting, in part, to this biomass fuel. As this shift continues and wood pellets are used more widely, there will be an increase in tree chippers and utilization of wood formerly considered waste and slash.

New mills are opening to produce waferboard, and at least four are expected to be operating by 1984. Waferboard can be processed from any species. While the single plant currently operating uses softwood, the three proposed plants will use poplar and mixed hardwoods. All four will receive a large portion of their wood fiber from the jurisdiction, although none are expected to be located there.

Other Forest Uses

While timber production will, in the forseeable future, continue to be the most significant economic use of the forest resource in the unorganized area, other uses — particularly dispersed public recreation, wildlife and fisheries habitat, and energy production — are also extremely important. With the cooperation of landowners, public use of the forest, particularly for recreation, has been allowed for many years in those areas where it does not conflict with the timber production goals of the owner. It is expected that this historical pattern will continue, although more intensive management practices may put new pressures on recreationally valuable areas. Development which commits land irrevocably to other uses and detracts from the forest resource should be limited in extent and location so as not to significantly detract from this most essential of the state's economic and recreational resources. Management for multiple use, which calls for the most judicious use of the resource for a variety of compatible purposes, should be encouraged whenever possible.

Regulatory Authority

The Commission's legal authority directs it to protect natural and social values and to prevent the despoliation, pollution, and inappropriate use of water resources. Relative to forestry activity, the Commission's regulation of timber harvesting and related uses is limited, by statute, to zoned protection and development subdistricts. In most protection zones, the Commission prescribes specific performance standards for harvesting and road building activities in order to preserve water quality, recreational, and aesthetic values. Where landowners have reason to exceed these standards, they may apply for a permit from the Commission to do so. A permit is required for all harvesting and related activities in zoned development districts.

This scheme of forestry regulation is perhaps unique in the United States. Tailored to the circumstances affecting the jurisdiction, this framework provides protection in sensitive areas while allowing for a substantial degree of

discretion and flexibility by landowners in managing the bulk of their land for timber production.

Nevertheless, many forest practice issues concern the Commission, including the effects of forest practices on water quality and recreation; the possible long term ecological effects resulting from pesticide and herbicide applications; the effects of large harvesting machinery on soil compaction and erosion; the effects of whole tree utilization on soil nutrients and subsequent tree growth; the impacts of increased accessibility to previously remote and fragile areas from new roads; and the effects of forest practices on wildlife habitats, steep slopes and high mountain areas. The Commission will keep abreast of these developments and adhere to a course of reasonable regulation in order to prevent undue adverse impacts of forestry practices in a manner consistent with its statutory mandate.

Wildlife and Fisheries Resources

The wildlife and fisheries resources of the unorganized areas contribute to the economic, environmental, and social welfare of people throughout Maine.

Wildlife

The wide variety of habitats within the jurisdiction supports a large number and diversity of wildlife species, some of which are rare. Wildlife which inhabit the area include deer, black bear, moose, bobcat, beaver, snowshoe hare, fisher, a variety of waterfowl, ruffed grouse, bald eagle, several hawks and owls, numerous other small mammals, amphibians, and passerine birds. Habitats supporting these species are furnished by the diversity of land cover types offered by forests, wetlands, mountains, and coastal and inland islands.

The primary problem affecting wildlife resources in the future will be the maintenance of habitat necessary for supporting population levels. Vegetation for food, shelter, and breeding habitat are essential to all species. Physical alterations to the landscape can destroy the delicate balance of land cover which provides the necessary habitat conditions for specific species of wildlife. Certain fragile habitat types, such as wetlands, deer wintering areas, fish spawning and nursery areas, and coastal nesting islands, are of particular concern because of the dependence of various animal species upon these habitats for survival. For example, in the case of colonial nesting birds, a relatively small development on an island used for nesting can significantly disrupt an entire colony.

Because of these competing uses and pressures on fragile habitat resources, the Commission has created the Fisheries and Wildlife Protection (P-FW) zone, in which critical portions of identified deer wintering areas, important coastal seabird nesting islands, and other significant wildlife habitat may be protected within a framework which allows for limited timber harvesting and other traditional economic uses that are not destructive of these habitats. To date, the Commission has zoned almost 200,000 acres of deer wintering areas and 40 coastal nesting islands. The Commission is considering application of this zone to protect other important habitats such as salmon spawning grounds and eagle nesting sites.

The use of forests for timber production can compete with the ability of the forest to sustain different species of wildlife. For instance, the level of deer population depends upon a diversity of habitats which must include an interspersion of food and cover. While a variety of vegetation, most importantly dense evergreen stands, provides winter cover, open areas where new growth can occur are necessary for food production. Thus, some timber harvesting contributes to the health of the deer herd by making food available. However, extensive harvesting in areas needed for winter shelter can cause deer mortality. This means that some restrictive management of harvesting is needed to conserve deer winter cover.

On the other hand, extensive harvesting has had a major influence on moose density and distribution. Moose, which were rare in the jurisdiction 40 years ago, are now abundant due in part to changes in habitat. Large clearcut areas, which are unsuitable for deer browsing because of their lack of cover, are ideal for moose.

The spruce budworm infestation has had and will have profound impacts on wildlife habitat. As millions of acres are defoliated, habitats are altered and, in some cases, destroyed. While the effects of budworm damage on wildlife populations have not been fully realized, the issue is particularly important since many zoned deer wintering areas are now severely defoliated. In fact, the spruce-fir forest type which provides the best deer shelter also tends to be the most susceptible to infestation. Landowners are reasonably requesting that cutting of dead and dying fir be per-

mitted. It is expected that the number of such requests will increase, and the Commission will respond by assessing each area and allowing cutting of trees which in its judgment no longer have significant shelter value.

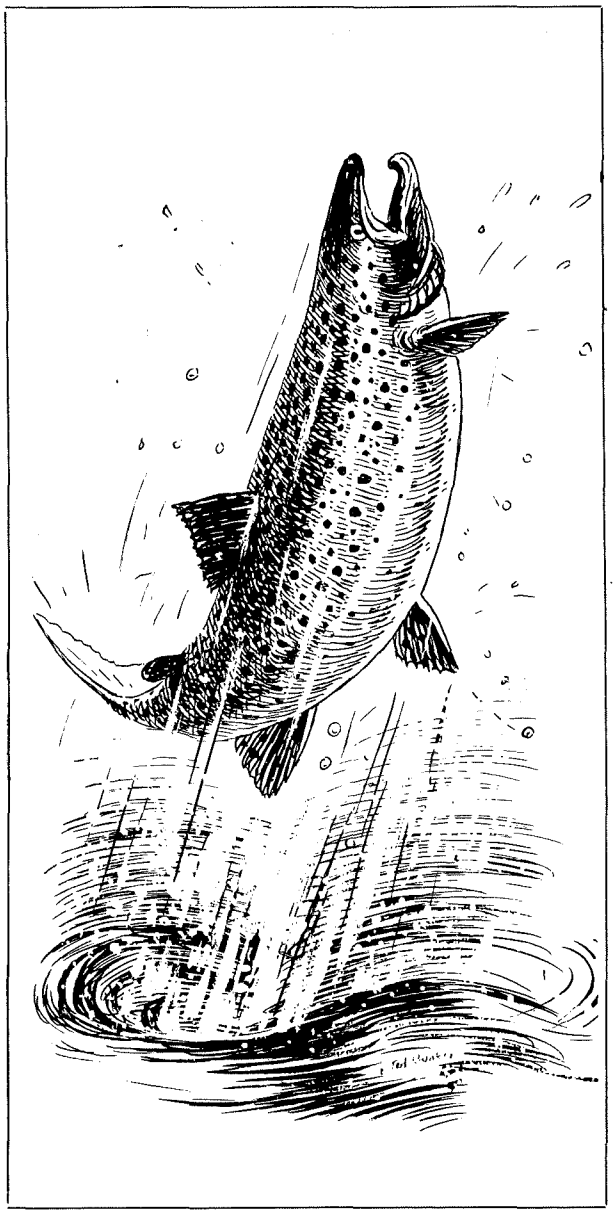
In response to these competing pressures and needs, the Commission recently undertook an in-depth assessment of its deer wintering area zoning and regulatory program. A day-long conference was sponsored by the Commission at the University of Maine at Orono concerning deer wintering area protection issues. Experts on the issues from all over the Northeastern U.S. and Canada addressed the well attended conference. Following further evaluation, the Commission adopted a statement of policies regarding deer yard zoning issues. That statement appears as Appendix A of this plan.

In a recent court case the Commission's deer wintering area zoning program was constitutionally challenged. After examining all of the constitutional issues involved, the Maine Supreme Judicial Court upheld the concept of restricting land uses to protect deer populations and the Commission's deer wintering area zoning in particular.

Fisheries

The unorganized areas contain a large number and variety of inland waters which support populations of 44 of Maine's 51 inland fish species. Each of these species of fish, together with the many species which utilize the coastal and estuarine waters within the Commission's jurisdiction, has specific physical, chemical, biological and habitat requirements. Water temperature, water chemistry (especially dissolved oxygen), suitable areas in which to reproduce, adequate supplies of necessary food, and the extent of competition from other species of fish are all factors which influence the ability of a species to survive. In addition to these factors, stocking and removal of fish add to the factors determining the distribution and abundance of fish species in Maine.

Many uses of land and water resources affect the quantity, quality, and diversity of aquatic habitat available for fish which influence the fishery resources and opportunities for fishing. The demand for forest products and outdoor recreation, combined with increased accessibility, can stress the fishery resource. Many human uses of land and water resources can alter one or more of the basic physical, chemical, or biological characteristics of aquatic habitat. These influence the composition of fish species through changes in conditions necessary for survival of the less adaptable species, especially the coldwater game fishes. Thus, uses of the land and water cause far-reaching, sometimes irreparable changes in water quality and aquatic habitat.



A variety of land uses affects water quality and aquatic habitats. The Commission does not have control over all these potential impacts, but it is able to consider many in its zoning and land use regulatory decisions. Among the more obvious:

- Erosion and resulting water sedimentation can occur from logging, farming, development, or other land use activities. Sedimentation of even small streams affects downstream habitats. Silt inhibits light penetration in the water necessary for photosynthesis. Sedimentation reduces the abundance and diversity of bottom-dwelling invertebrates necessary for the ecological balance and may reduce or eliminate suitable fish spawning and nursery areas.

- Deposits of logs and slash in stream channels may restrict fish movements, smother spawning grounds, cause chemical changes in the water, and change the course of stream channels.

- Cutting trees to the water's edge permits greater exposure of water to sunlight, causing the abnormal warming of waters, sometimes beyond the tolerance limits of cold water species.

- Introduction of toxic chemicals from the use of insecticides, fungicides, herbicides, and mining or other activities may kill fish or essential aquatic organisms in the food chain.

- Introduction of fertilizers, animal wastes, septic effluent, or other wastes can accelerate eutrophication.

- Improperly placed culverts and bridges may block fish movements and change flow characteristics.

- New logging roads can increase access to once remote areas often increasing fishing pressure in nearby waters and causing a decline in fishing quality.

- Extensive shoreland clearing can result in erosion and sedimentation.

- Filling, dredging, beach construction, or shoreline alteration may eliminate existing fish habitat.

- The construction of dams for hydropower, water storage, flood control, or irrigation purposes can obstruct fish movement and cause fluctuations in stream flows and lake levels which influence fish movements and reproduction. Artificial flowages change aquatic habitat, and often the distribution, abundance, and composition of fish species.

- Permanent structures in the water can change shoreline water and wind currents. This can result in erosion of materials from one area and deposition into another.

Disruptions to fish habitat and fisheries are more easily identified from large scale alterations, but small scale alterations, while singly causing more subtle changes, can also be important because of their cumulative effects, and because a specific and limited habitat type may be essential to some species of fish. Also, tiny headwater streams may be habitat for gamefish fry and the insects and fish upon which they feed.

The Commission's standards and guidelines regulating timber harvesting, road construction, and structural development activities near water bodies are designed to minimize the potential adverse effects of development upon fisheries and other aquatic life while still allowing for a reasonable degree of development and forest management.

In addition, in response to the need for protecting remote fishing ponds supporting a high quality cold water game fishery, the Commission has applied Recreation Protection (P-RR) zones to some 175 remote ponds in its jurisdiction. Further, the Commission is considering the application of the P-FW zone to identified salmon and other important fishery habitats found in its jurisdiction.

Air Resources

While the area has always been seen as possessing clean air, local sources of air pollution in the wildlands come from the sulfate processing pulp mills that neighbor the jurisdiction. Other sources include insecticide and herbicide spraying, open burning dumps, forest fires, and woodburning stoves. In addition, some total suspended particulate matter, sulfur oxides, carbon monoxide, hydrocarbons, and nitrogen oxide emitted into the atmosphere from population and industrial centers on the East Coast, in the Midwest, and in Southern Canada are transported downwind great distances and deposited in Northern Maine.

The presence of these atmospheric pollutants was first identified by measurements of rain and snow. Some of the pollutants, particularly sulphur dioxide and nitrogen oxide, combine with water in the atmosphere to form acids. These acids are washed out of the atmosphere by rain, snow, and fog. The acidity of precipitation has increased markedly over the past 25 years. Today's precipitation is 10 to 50 times more acidic than would be expected for an unpolluted atmosphere.

Unfortunately, precipitation measurements alone do not reflect the magnitude of the problem. Dry deposition occurs when very fine sulfur particles are filtered out of the air stream by leaves and other surfaces, and gaseous deposition occurs when sulfur dioxide gas dissolved in a lake or in moisture films on vegetation and soil particles. Such deposition accounts for ⅓ to ½ of the sulfur reaching Northern Maine.

In addition, background levels of trace metals have increased as a result of industrial activities. Again, Northern New England is particularly affected because of its downwind position from industrial areas. Deposition rates for lead, zinc, cadmium, copper, chromium, and vanadium have increased dramatically. Lead concentrations in some rainstorms in North-central New Hampshire have exceeded the U.S. Public Health Service drinking water standards. Soil measurements there show that lead accumulations increased by 13% in four years.

While it is impossible to make precise estimates of the damaging effects of these air pollutants, some ecosystems are already showing signs of stress.

The ability of Maine lakes to withstand acidic rainfall is limited since many are surrounded by shallow, porous soils and granite bedrock which offer little acid-neutralization capacity. A recent study of 29 lakes in the Commission's jurisdiction found that the average lake pH was 6.03 with a range of 4.5 to 6.9. A pH range of 5.0 to 6.0 may eliminate many acid intolerant plant and animal species and disrupt existing biological communities. Such disruptions reduce the food available to fish. Major reductions of acid-intolerant fish populations start at pH 5.0; below pH 4.5, no species can survive.

The problem in Maine is not yet as extensive as has been noted in a few other areas, such as the Adirondacks and parts of Scandinavia where hundreds of lakes are now devoid of fish. But preliminary results from a fishery impact study of acid rain being undertaken at the University of Maine at Orono show that some acidic ponds are unable to sustain brook trout populations, and others have only mature adult populations. While this implies that there is a correlation between acidification and fish population reductions in Maine, lack of historical data on trout populations and lake acidity levels, along with extensive manipulations of fish populations from stocking, means that the effects cannot, as of yet, be absolutely documented.

Forest ecosystems are also considered potentially at risk due to acid rain. Higher elevation forests, in particular, because they receive more rainfall, more condensation from cloud moisture, and have higher rates of dry deposition, are subjected to more such pollution than surrounding lowlands. There is concern that New England's higher elevation red spruce forests may be particularly sensitive to

increased acidity. Measurements of red spruce forests in the mountains of Vermont and New Hampshire indicate increased mortality. While it may be premature to directly connect air pollution stress to this decline, researchers are continuing to seriously study the relationship.

The Commission is extremely concerned with the effects of ambient pollutant deposition within the jurisdiction. It recognizes that this may be one of the most critical and difficult environmental problems facing Maine's wildlands, and it will actively support state and federal efforts to alleviate this problem.

Mountain Resources

The spine of the Eastern Seaboard, the Appalachian Mountains, begins in the western portion of the Commission's jurisidiction. These mountains are fragile environments with harsh climates offering some of the most spectacular scenery in the state.

Many of Maine's mountain tops have a subalpine climate. The average annual temperature and the growing season are less than at lower elevations. Wind velocities, humidity, and precipitation are considerably higher than at lower elevations. Soils are often fragile, shallow, acidic, and infertile. Slopes are generally steep at high elevations with a high erosion hazard.

The diversity of vegetation decreases with increasing elevation, reflecting the harshness of the environment. Vegetative communities of low diversity are the result of more environmental stress than those of greater diversity. On the upper mountain slopes the plant communities are composed of mosses, lichens, sedges, and grass-like plants which are very sensitive to disturbance. Below these are the stunted fir, spruce, birch communities followed by a forest made up of balsam fir, red spruce, and white and yellow birch. Growth rates of all species are slower at high elevations. Two of Maine's rare plant species currently under review for federal endangered/threatened status (the White Mountain silverlong and Boott's rattlesnake-root) are found in mountainous areas in the jurisdiction.

Mountain areas are often chosen as sites for development of recreational facilities and vacation homes. Such development can cause serious environmental problems since soils there are generally unsuitable for sewage disposal. In addition, construction itself can result in soil disturbance with high erosion potential. The costs of construction and maintenance are usually great due to steep slopes and hazards. Development can impair the scenic quality of these areas and decrease their value for primitive, non-intensive recreation, wilderness, and wildlife habitat.

Today there are significant environmental and economic constraints which inhibit the use of mountain areas for timber production. The most important limitation is soil. Road construction and skidding operations in mountain areas can disturb the fragile soil and result in high erosion potential. Once erosion has begun, it is hard to check because regeneration of the few natural species of plants at high elevations is slow and the steep slopes accelerate erosive forces and inhibit stabilization.

Mountain areas are a source of abundant good quality surface water. Mountain soils hold large quantities of water resulting from the high level of precipitation. The water filters through the soils and eventually adds to stream flows, springs, and ground water supplies in lowland areas.

Dispersed recreation, such as hiking, cross-country skiing, and snowshoeing, is a significant use of mountain areas, and one for which there is increasing demand. Generally, this type of activity is compatible with the characteristics of mountain areas and with their use for scenic, wilderness, wildlife, and water resource values. However, soil compaction, loss of vegetative cover, and erosion can result from heavy use of trails.

Developed recreation, such as ski areas and four season resorts, occurs in mountain areas. These have the potential to degrade mountain habitats and therefore require regulation to insure the public interest is served.

Accordingly, the Commission has placed land in the jurisdiction above 2,700 feet in elevation into Mountain Area Protection (P-MA) zones. This zone regulates certain land use activities in mountain areas to preserve the natural equilibrium of vegetation, geology, slope, soil, and climate. This, in turn, reduces the danger to public health and safety posed by the consequences of misuse in unstable mountain areas, protects water quality, and preserves mountain areas for their scenic values and recreational opportunities.

Coastal Island Resources

While the bulk of the jurisdiction is deep inland, a portion borders the coast. These coastal areas include two island plantations, more than 220 named islands, and over 100 unnamed islands and ledges, and represent about ten percent of the total number of coastal islands in Maine. These islands, located chiefly in the midcoastal part of the state, constitute a unique source of economic, recreational, environmental, cultural, and aesthetic values within the Commission's jurisdiction.

While permanent settlement has declined, seasonal island residents have been increasing. Today, recreational use is the dominant land use activity on many of the coastal islands. Boating, sailing, swimming, camping, picnicking, and nature study are among the most popular activities. In some respects, the islands are less disturbed now than at any time in the past 200 years. As quarrying, clear cutting, heavy grazing and extensive farming ended, many islands have reverted to a relatively natural state which is deserving of protection.

A number of features, including size, exposure, soils, water, habitat, access, location, and visibility limit and influence activities on the islands.

Even the largest islands within the jurisdiction are only a few hundred acres in size. Because they are so small, the islands are particularly vulnerable to constant stresses from winds, waves, tides, salt, ice and animals. There is, moreover, a direct relationship between the size of an island and the diversity of habitat and species found on it: smaller islands tend to have fewer and often more fragile habitats and species than larger ones.

Island soils are generally acidic, infertile, shallow, wet, and often organic. Shallowness especially restricts development suitability as few areas have adequate soils for solid and liquid waste disposal.

Several problems arise with respect to the limited and fragile water supplies of the islands. Some forms of intensive development can result in a loss of infiltration and ground water recharge ability. Since fresh water on islands is underlain by salt water, excessive pumping can cause salt water intrusion into wells. Increased numbers of people, even day visitors, can cause increased demand on the limited supply of fresh water, which is renewed only through precipitation. Effluent from septic systems or leach lines can also pollute ground water supplies unless the systems are carefully designed and located.

The coastal islands stand at the interface between two contrasting environments, marine and terrestrial. The influence of the marine climate is strong upon the terrestrial climate, cooling and moistening the summers and warming the winters. On the coastal islands in the jurisdiction, the vegetative cover varies depending upon these influences and the natural character and past use of each island. Historically, at climax stage, the natural cover was a diverse mixedwood forest. However, due to extensive harvesting of hardwoods, the climax stage in many of today's island forests is characterized by white and red spruce. Mosses and lichens cover a large portion of the forest floor. Herbaceous plants and shrubs are found on many islands but only rarely do they represent the dominant vegetative community.

Many of the coastal islands are important for the migratory and resident birds they harbor. Certain islands within the jurisdiction provide essential nesting sites for a variety of significant seabirds including eider ducks, puffins, black guillemots, terns, leach's storm petrels, razorbill auks, cormorants, and gulls. Shore and wading birds are also abundant on the islands as well as terrestrial birds, notably ospreys and bald eagles.

In sum, both because of their location at the extreme of the ranges for so many species and because of their biological and geographical remoteness, the islands in the jurisdiction are important as natural sanctuaries for the preservation of biological diversity.

In order to maintain the special qualities of the coastal islands — their scenic, recreational, biological, commercial, historic, archaeological, scientific and educational values — entire islands and portions of others have been placed into various protection zones to preserve these values. Of particular note are those island areas zoned P-FW because of their significance as important nesting habitat for seabird populations. On island areas not identified as requiring special protection, LURC has granted permits for carefully planned development.

Recreational Resources

The unorganized territory offers a variety of recreational opportunities for Maine residents and visitors. Since much of the area remains undeveloped, portions of it are ideal for outdoor recreation activities. There are mountains for climbing and hiking; lakes for boating and fishing; rivers for canoeing, rafting, and fishing; isolated sites for primitive camping; sandy beaches for swimming; mountain slopes for downhill skiing; extensive forests for hunting and trapping; long, snowy winters for snowmobiling, cross-country skiing, and snowshoeing; and coastal islands for wildlife viewing.

Maine's wildlands have long been recognized for their beauty and their remoteness. They offer the recreational opportunity of being surrounded by vast expanses of undeveloped lands. Few places in the Eastern United States provide this exceptional opportunity. It is one of Maine's most precious resources, and one that continues to play a vital role in the jurisdiction.

Yet these areas are not immune from development and land use pressures, including those encouraged by the presence of high recreational values. With seasonal homes representing a sizeable portion of the Commission's building permit activity, and new roads making more lakes and remote areas accessible, the opportunities for development and recreational use in previously remote areas are increasing. Records from North Maine Woods, Inc., a landower organization that controls and monitors recreational use in Maine's northern woods, show a 20% increase in visitor use from 1977-80. Recreational use as noted at Great Northern Paper Company gates shows a 30% increase between 1976-1981. While no records are kept on use of the Maine Forest Service campsites, rangers note that many are used intensively. Data from the Department of Inland Fisheries and Wildlife show that the wildlands continue to be important for hunting and fishing of many species. The limited data reflecting recreational use on coastal islands show increases in visits and dramatic growth in boat registrations. While white water rafting on the Kennebec and Penobscot Rivers began only in 1976, in 1982 20,000 people rafted down those two rivers, and such use is expected to increase. Meanwhile, many rivers in the jurisdiction are also being used more frequently for canoeing and kayaking.

Lands in the jurisdiction used soley for public recreation are owned and managed primarily by state agencies. The Department of Conservation, Bureau of Parks and Recreation, manages approximately 41,000 acres in the jurisdiction. These include the Allagash Wilderness Waterway, Bigelow Preserve, Cobscook Bay State Park, Grafton Notch State Park, Lily Bay State Park, and sections of the Appalachian Trail and Rangeley Lake State Park. In addition, Baxter State Park (201,018 acres) lies in the middle of the jurisdiction. It is managed by the Baxter Park Authority and, by opinion of the Attorney General, is not subject to the Commission's regulatory authority.

Other publicly owned lands are managed for multiple uses of which recreation is important. The Department of Conservation, Bureau of Public Lands manages roughly 400,000 acres of public reserved lands in the Commission's jurisdiction. It is the task of that Bureau to determine for each public lot the most efficient and economic management for multiple use purposes, including forestry, recreation, and wildlife of all these public lands.

The Federal Government administers 70,700 acres within the jurisdiction, including portions of the White Mountain National Forest in Oxford County (48,029 acres) and portions of the Moosehorn National Wildlife Refuge in Washington County (22,666 acres). While these lands are managed for a variety of public purposes, forestry, recreation and the preservation of wildlife habitat are the most significant. The White Mountain National Forest is managed pursuant to a detailed management plan which has been approved by the Commission, and therefore has been zoned in a Resource Plan Protection (P-RP) subdistrict.

The Nature Conservancy manages seven parcels in the jurisdiction. These include Bradbury Island, Mark Island, and Sheep Island, all in Penobscot Bay; A.H. Dayton Natural Area, an island in Nicatous Lake; the Hermitage, T7 R10 WELS; Moose River Preserve, Rockwood Strip; and Seboeis River Gorge, T5-6 R7 WELS. While these lands are held for preservation, non-intensive public recreation is allowed in most areas.

There are miles of land and water trails in the jurisdiction. The most notable hiking trail is the Appalachian Trail. Of the 276 miles of the AT in Maine, nearly all are located in the jurisdiction. Efforts are currently underway by the State to acquire the length of the trail by either fee or easement, and at this time, some 80 miles are publicly owned. In addition, there are hundreds of miles of other significant hiking trails. There are also trails for snowmobiling, snowshoeing, and ski touring.

Of the nearly 4,500 miles of river canoe routes in the state, many are in the unorganized areas and are used extensively for canoeing, kayaking, and on some rivers, for rafting. A detailed description of river resources is included in this plan's discussion of water resources.

Dispersed, isolated recreational experiences are available at campsites run by both

North Maine Woods, Inc. and the Department of Conservation, Maine Forest Service. There are roughly 90 primitive Maine Forest Service campsites, and North Maine Woods manages over 600 campsites in Northern Maine.

The LURC statute requires the Commission to place in protection districts "areas where development would jeopardize significant natural, recreational, and historical resources." To carry out this charge, the Commission has created the Recreation Protection (P-RR) zone to protect from incompatible development and other intensive land uses those areas that currently support or have opportunities for significant primitive recreation activities.

To date, the Commission has placed in P-RR zones approximately 300 miles of hiking trails (including nearly the entire Appalachian Trail). In addition, because of their significance as canoe trails or for other forms of recreational boating, the Commission has applied P-RR zoning to major portions of the Lower Dead, the Moose, the Penobscot, and the Allagash Rivers. Resource Plan Protection (P-RP) zoning has been applied to major portions of the St. John and Penobscot Rivers. The Commission has also applied P-RR zoning to 175 remote, undeveloped ponds having a significant cold water game fishery. Through this form of zoning, the Commission will continue to support protection of the jurisdiction's most significant recreational areas.

For recreation needs in many areas, specific protection is not necessary beyond that afforded by managment district zoning or that applied normally to shoreland and mountain areas. Many non-intensive, outdoor recreation activities can coexist with other land use activities, including forest management, in these areas. As a rule, the Commission favors concurrent, non-intensive and non-exclusive recreational uses over exclusionary, intensive uses.

Mineral Resources

Development and exploitation of Maine's mineral resources have contributed to the state's economy for more than 150 years. While the state has historically been best known for its granite quarries, both limestone (for cement and agricultural lime) and metallic ores (copper, zinc, and lead) have also been mined. In addition, there have long been small scale mining operations for sand, gravel, semi-precious minerals, and construction stone.

Recently, there has begun a national effort to locate more of the country's mineral resources so that the United States can become more independent from the uncertainties of the global market place. State policy supports this effort, since mineral development will also serve to expand and diversify Maine's economic base and create new employment opportunities. As a result, there has been renewed interest in the state's mineral resources, and exploration is underway in the jurisdiction for a number of minerals, including copper, lead, zinc, nickel, cobalt, tin, tungsten, silver, gold, and bismuth.

The Commission acknowledges that mining presents the prospect of a major land use which can provide new economic activity in portions of the jurisdiction. At the same time, it recognizes that a variety of environmental tradeoffs and concerns may accompany mining development. The major concern is for the protection of water quality. Other important issues are mining impacts on aquatic and terrestrial plants and animals, air quality, the socioeconomic environment, the disposition of waste by-products, and site reclamation. State policy echos these concerns and endorses mineral development only when it poses no significant environmental threat and adheres to sound and effective land use, environmental, safety, and health standards.

Unfortunately, metal mining within the jurisdiction is especially difficult to plan for since so little is known yet about the location and nature of commercially attractive deposits. Accordingly the Commission will respond to major mining proposals in a two-step fashion. First, a rezoning application for industrial development must be submitted for all major mining proposals. Rezoning provides the public an opportunity to consider the overall, long term land use and community tradeoffs and impacts of proposed major developments and allows developers to get an early reading as to how a proposal is likely to be viewed by the Commission. For the second stage, the site review process, the Commission has developed a detailed application format which requires a comprehensive environmental assessment describing the immediate and long term, direct and indirect, and on-site and off-site impacts of any major mining proposal. The Commission will review mining development proposals and assess the effect an operation will have on environmental, scenic, recreational, cultural, and economic values.

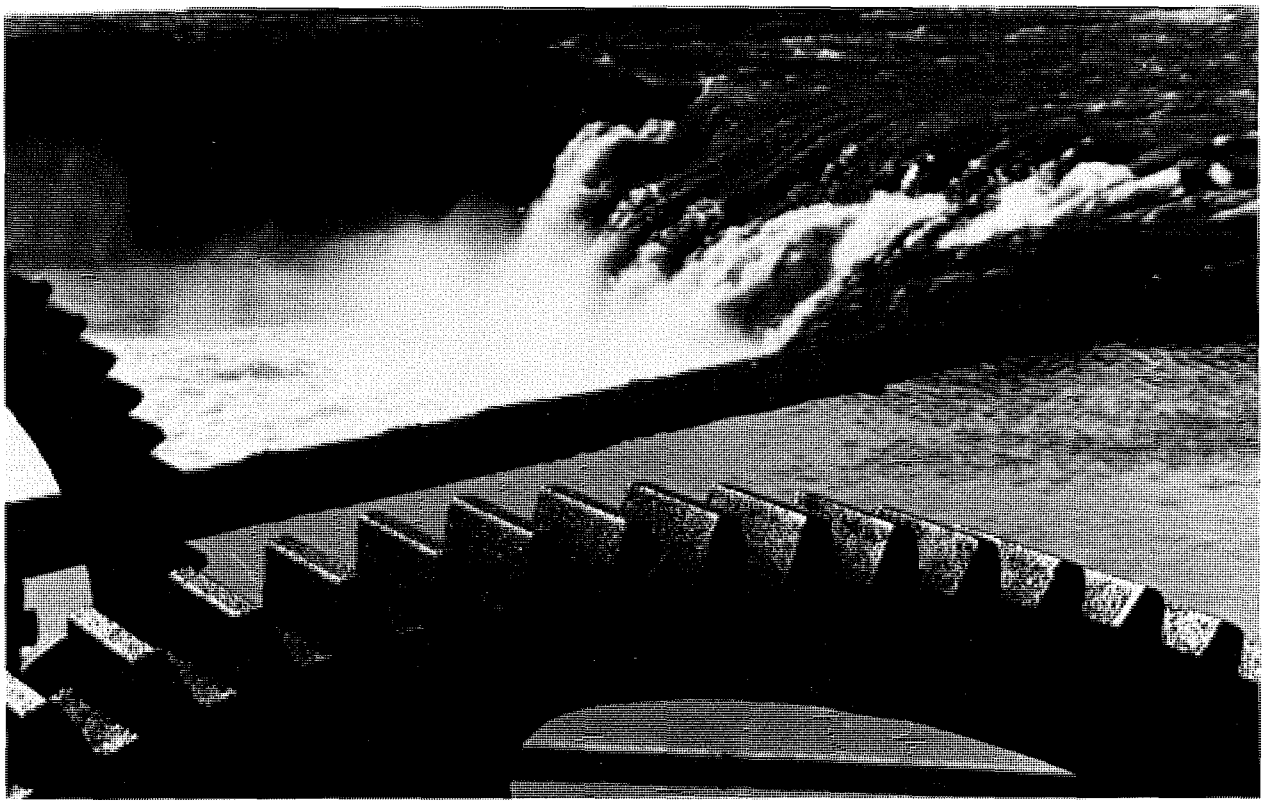
In cases where a new mining operation is permitted, monitoring studies prior to, during, and following operations will be required in order to detect environmental changes resulting from mining operations. The Commission will require that water and air quality not be unreasonably degraded and that mining sites be effectively and permanently reclaimed.

Energy Resources

While actual energy consumption in the jurisdiction is low, the wood, hyrdopower, and peat energy potential there are attractive to state and regional markets. The State Energy Policy recommends taking reasonable measures to utilize all of these energy options, and over the next five years development efforts are expected to intensify as to each. These efforts have already begun to bring to the fore the complicated questions that arise when there are potentially competing and conflicting uses for a given resource. These potential conflicts are particularly clear for hydropower and peat development. The reader is referred to the water resources section of this chapter for additional discussion of hydropower and to the wetlands section for additional discussion of peat.

Hydropower

In 1982, hydropower projects within the jurisdiction had a total capacity of approximately 215 megawatts, accounting for roughly 40% of the state's installed hydropower capacity. Hydropower accounts for approximately 20% of the state's residential and industrial electrical needs. The State Office of Energy Resources estimates that untapped hydropower sources statewide could provide upwards of 660 megawatts of installed hydropower capacity. Slightly less than half of this resource potential falls within the jurisdiction. However, many of these sites may be unsuitable for power production because initial capital outlay is prohibitively high or because of the unique recreational and/or natural values these areas provide. On rivers and river stretches where recreational and natural values are not of overriding concern, appropriate hydropower development may be considered.



At this time, major new dam projects are being considered at six sites in the jurisdiction (see figure 6). At two of these sites, Big Ambejackmockamus (Big "A") on the Penobscot River and a project on the Moose River, proposals for new dams are anticipated. Proposals for refurbishing existing storage and/or power generating facilities are expected at three sites: the Upper Project, at Mooselookmeguntic and Upper Richardson Lakes; the Middle Project, at Lower Richardson Lake and the Rapid River; and at Aziscohos Lake and the Magalloway River. In all cases, applicants are proceeding under a preliminary study permit from the Federal Energy Regulatory Commission (FERC). The preliminary permit grants the permittee exclusive rights, for up to 18 months at existing dam sites or 3 years at a new dam site, to make the studies necessary to file an application for a permanent license. On most of the projects, discussions have been or will be held between the Commission's staff and the developer in order to refine and address the issues of concern.

At several other major sites, plans for potential hydropower projects have been reversed. For example, the federal Dickey-Lincoln School Lakes Hydropower Project proposed for Northern Maine has been deauthorized by Congress. Feasibility of a much smaller public project at Lincoln School is being studied by the Army Corps of Engineers. In addition, at this time study of the Cold Stream Project on the Kennebec River, the Gordon Falls Project on the Mattawamkeag River and the Aroostook River Project have been voluntarily terminated and preliminary permits have been surrendered by the private developers who were pursuing them.

Hydropower issues are discussed further in the water resources section of this chapter.

Peat

Maine has an estimated commercially valuable reserve of some 150 millions tons of peat, at least one-third of which lies in the jurisdiction (see figure 5). Peat can be mined to provide energy in the residential, commercial and industrial sectors. While no peat is currently being used for this purpose, the most recent State Energy Policy predicts peat to be a meaningful part of the state's energy budget by the year 2000.

However, not all peatlands are appropriate to mine for fuel. Some support rare plant species and animal habitats or are otherwise ecologically or culturally valuable. In addition, there are a variety of other uses, including agricultural uses, which may compete for the peat resources.

These issues are discussed further in the wetlands sections of this chapter.

Wood

At this time, there has been limited use of low grade trees and underutilized species found in the jurisdiction. This presents an excellent opportunity for a new energy source. The major energy use of wood from the jurisdiction in the past has been to heat and, in some cases, provide steam for electricity at pulp and saw mills. Second, cordwood has been used for space heating in areas near the jurisdiction. While some increases are expected for these uses, the State Energy Policy is encouraging the use of whole tree chips and pellets as an energy source for industrial, commercial, and residential sectors.

Agricultural Resources

Only a small portion of the area within the Commission's jurisdiction is used for agricultural production. Potatoes (20,000 acres) and blueberries (10-20,000 acres) are the major cultivated crops. In addition, there are smaller amounts of land devoted to poultry, apple, vegetable, dairy and beef cattle farming.

A number of factors contribute to the limited extent of agricultural activities within the jurisdiction. Many of the soil types are unsuitable, the growing season is short, and the distance to agricultural markets is great. The pattern of ownership, in which the bulk of the land is held by large landholders for timber production, is also a major factor which limits allocation of land to agricultural uses.

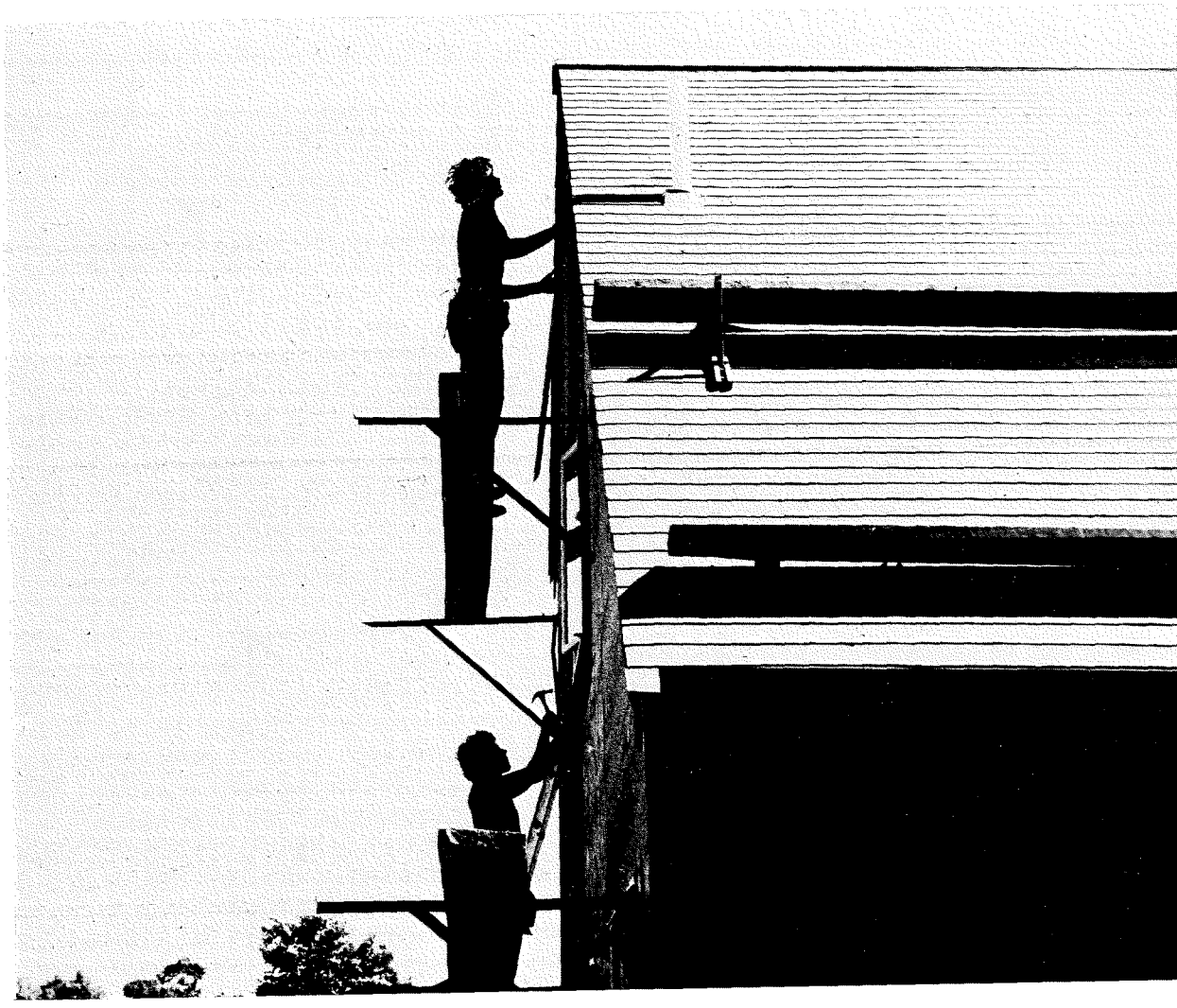
An issue of national and global importance is the removal of fertile agricultural land from food production. Permanent development on prime agricultural land removes that land from future production. The use of less productive agricultural land (which is often suitable for permanent development at only slightly higher preparation costs) can preserve the productive capacity of prime agricultural land. The USDA has mapped by medium intensity soil surveys roughly one million acres in Northern Maine and has identified about 20,000 acres of potato farmland in Aroostook County as being prime state agricultural land. The Commission will discourage incompatible land uses on known prime agricultural lands.

Historical Resources

Remnants of human settlements dating back as far as 12,000 years are scattered throughout the jurisdiction. The historical resources that are most well known are related to the early days of the timber industry and include canals, dams, railways, sluiceways, logging settlements, and farms.

The Commission recognizes that historical resources are threatened by development, improperly conducted timber harvesting, and uncontrolled use. A number of historic sites have been identified and many are zoned for protection by the Commission. These include the Telos Canal, the Eagle Lake Tramway, the Monhegan Island Lighthouse area, the Arnold Trail, Northeast Carry and Penobscot Farm.

In addition, other sites identified as being archaeologically or historically valuable by the Maine Historic Preservation Commssion and LURC are plotted on LURC maps. In making permit decisions, the Commission considers the effect that a proposed activity will have on an historic site.



Chapter 3

Development

Population within the jurisdiction of the Land Use Regulation Commission is sparse. For the most part it is concentrated in a few small communities and in settlements scattered along shorelines, on public roads, and adjacent to recreational focal points. While residential and commercial-industrial developments are important land uses in some portions of the jurisdiction, recreation and forestry are the dominant types of land use. In order to insure a continuation of these uses, the Commission's approach to guiding future development is rooted in efforts to insure that forest and recreational values are preserved while residential, recreational, commercial and industrial developments are encouraged in suitable areas.

This chapter describes patterns of settlement and development in the jurisdiction, examines areas of recent growth, and discusses development data and trends.

Pre-historic and Historic Development

The earliest known human occupation of the jurisdiction was by Paleo Indians dating back 12,000 years. These were followed by occupations by the Red Paint people, Susquehanna people, and the Ceramic or Woodland people who are ancestors of today's Wabanaki. (Wabanaki, meaning People of the Dawn, is the general name for all tribes in Maine.) The Wabanaki had a number of permanent villages along rivers, each used seasonally for the resource it offered: maple syrup in late winter; fish in the streams and greens on the shores in spring; coastal mammals and fish in the summer; harvesting corn and hunting birds, deer, bear, caribou, and moose in fall; and hunting fur-bearing animals for warm robes and large game for food in the winter.

Wabanaki tribes met the early European explorers at the end of the 1500's. Shortly thereafter European settlers came to Maine's coastal islands and shores for fishing and fur trading, then farming, shipbuilding, and quarrying. Later settlements were related to quarrying and timber harvesting. As quarrying, clear-cutting, heavy grazing and extensive farming ended, many islands reverted to a relatively natural state, and today are considered unsuitable for most intensive land uses.

In the interior of the mainland, settlement did not begin until about 1800, and generally spread inland from south to north. Early settlements depended upon subsistence agriculture and small scale timber harvesting. Harvesting operations advanced eastward and northward from river to river, from the Saco to the Presumpscot, and on to the Kennebec. This allowed for the movement of timber from as far north as Moosehead Lake.

The peak of the lumbering activity occurred along the Penobscot River during the 19th century. Huge volumes of spruce, pine, oak, and larch were cut for ship building and lumber; hemlock was cut for the tanneries; hardwoods were cut for dowels, posts, and veneers. By 1861 the forest along the Penobscot was thinned as far north as Medway, and loggers followed the river's East and West Branches deep into the wildlands. Throughout the 18th and 19th centuries, timber was transported by oxen, horses, and water. Elaborate systems of dams, canals, and booms were devised to control and facilitate log movement. Lumber camps were built to house cutters, and farms were carved out of the wilderness to supply forage, bedding, produce, meat and shelter.

As the wilderness opened to logging, so did it to tourism. People came from the industrializing cities of the East Coast by steamboat, buckboard, rail, and canoe. Some came to stay in expensive resorts like Kineo, Harfords Point, and Seboomook. Some came to live in simple sporting camps and were guided to the choicest hunting and fishing spots. Others came with canoes and their wilderness guidebooks to explore the mysteries of the forests, waterfalls, mountains, and islands.

In the 1830's and 40's, Maine granted land for roads, railroads, schools, and colleges in response to and to encourage a growing population and a demand for more and better transportation for forest products. About the same time, many individuals became aware of the importance of the timberlands and the "land boom" began. During this period, land in Maine was quickly transferred from public to private ownership. By 1847, almost all of the public lands in the state had been sold by Maine and Massachusetts, with the exception of a thousand acre public lot reserved in each township.

The jurisdiction never became heavily settled because, by the time most of it was opened for settlement in the 1800's, a national migration was luring pioneers from the East Coast to agricultural lands in the Midwest and mining claims in the West. By 1890, the population of the jurisdiction had already peaked. Although new settlements were developed particularly in the northern part of the jurisdiction, the unorganized area as a whole was depopulating by the turn of the century. This trend continued until 1970.

Today's land ownership patterns and uses reflect these early settlement trends. The large holdings which dominate most of the jurisdiction are managed primarily for pulp and timber production and used extensively for recreation. While some of this land is also leased for seasonal housing, most residential development continues to be associated with small land holdings in plantations and near towns. The 1980 census confirms population increases in these areas.

Current Development

To date about two percent of the land in the jurisdiction has been placed within development zones. Most is concentrated along the periphery, adjacent to the incorporated areas of the state. These zones protect the important forest and recreation resources by minimizing random commerical, industrial, and subdivision development. Further, the Commission's adjacency policy encourages development in areas near existing development and services. All development proposals which could adversely affect these resources are carefully reviewed. These include housing, recreation, commerce and industry, transportation, waste disposal, and public utilities.

Housing

The principal type of structural development in the unorganized areas today is housing. U.S. census data (1980) show 17,043 housing units within the jurisdiction. An estimated 6,000 of these are permanent dwellings, and 11,000 are seasonal or recreational homes. Most of the permanent residents live along public highways, but much of the seasonal housing is found on lakeshore sites. The typical housing pattern is linear development, one lot deep, along a road or lakeshore.

While the average density of housing units within the jurisdiction is exceedingly low (approximately one unit/square mile), concentrations of residential development are found in the plantations and near the organized towns outside of the jurisdiction. Yet seasonal homes and even subdivisions are scattered into some of the jurisdiction's more remote areas. Pressures for future residential development probably will follow the same patterns. The issues posed by such prospects range from the availability of municipal services to the potential destruction of wildlife habitat and wilderness values in the remote reaches of the jurisdiction.

The majority of housing is used in conjunction with seasonal recreation. In addition to lake shore developments, ski areas serve as focal points for housing and subdivision growth. Much of the housing surrounding ski areas is second home development equipped for year round use due to the wide range of recreational choices offered nearby.

Because of a number of factors, the most important of which are the economic climate and cost of gasoline, there has been a reduction in new subdivision development since 1976. When the economy improves, the Commission expects that there will be pressures for more such developments, particularly along shorelands. Such development requires careful planning since the conservation of the natural resources which support and enhance outdoor

recreation often conflicts with the development these recreational opportunities attract. Inadequate sewage disposal, for example, can degrade the quality of the lake which was the attraction of a particular area. Similarly, housing too close to the shoreline can intrude visually and reduce the aesthetic quality of water-oriented recreation. Shorefront development can also destroy vegetation and shoreline soil, leading to sedimentation and water quality degradation.

To minimize these conflicts, the Commission requires that housing be set back from roads and shorelines. Whenever possible, topographical and vegetative buffers must be used to screen buildings. Clearing of trees is also limited along roads and shorelines to provide a visual buffer strip. More information on these requirements is available in the Land Use Handbook, Section 4, "How to Apply for a LURC Building Permit," and Section 5, "Design Ideas".

The intrusion of housing and associated developments can affect areas used for remote recreation activities such as hiking, camping, canoeing, fishing and hunting. One purpose of the Commission's development policy is to reduce this intrusion on remote recreation activities and on the wildlife and natural characteristics which support them.

Recreational Facilities

Most recreational activities in the jurisdiction are low to medium intensity activities which require development of few, if any, support services. Among the more common examples of those support facilities that do exist are sporting camps, tent and recreational vehicle camping areas, lakeside cottages and lodges, and facilities related to canoeing, whitewater rafting, and kayaking. In addition, there are public and private sites for picnicking, boat launching, and swimming as well as trails for snowmobiling, hiking, cross-country skiing, and snowshoeing.

Recreational development on the coastal islands is hindered by water availability and sewage disposal limitations. Most of the development consists of vacation homes and support services for the day, overnight, and seasonal users. Many island bays are used by boaters but require only minimal support development.

The most intensive recreational development in the jurisdiction is associated with two alpine ski resorts: the State-owned Squaw Mountain Ski Area in Big Squaw Township near Greenville, and the Saddleback Mountain Ski Area in Sandy River Plantation near Rangeley. Sugarloaf Mountain Ski Area in Sugarloaf Township was also in the jurisdiction until the Town of Carrabassett Valley annexed the township and applied its own land use regulation in 1977. However, nearby unorganized townships within the jurisdiction continue to provide some of Sugarloaf's needed support services.

Alpine ski resorts require more development than merely lodges and ski trails. These areas also generate considerable development of on-site or nearby ski-associated businesses including restaurants, snack bars, ski shops, ski schools, and overnight accommodations as well as secondary commercial and seasonal developments. Generally, these developments are located along transportation corridors within easy driving distance of the base lodge.

In addition to the visual impacts of development activities, constructing buildings and ski trails on steep slopes with shallow soils may contribute to erosion and destroy fragile wildlife and vegetation habitats. Yet these problems can be solved. When wildlife biologists found the unusual yellow-nosed vole on the slopes of Sugarloaf, for example, new trails were planted with special ground cover to insure the continuation of suitable habitat.

Commercial and Industrial Development

Few commercial or industrial facilities have been located within the jurisdiction, as nearby organized areas often provide for those uses.

Where they do occur, commercial activities in the jurisdiction are normally one of two types: recreation-oriented businesses such as motels, restaurants, commercial sporting camps, and ski facilities; and general services, such as gas stations and general stores. Usu-

ally these businesses are visually prominent, near major highways. Parking is sometimes inadequate. Adverse effects can be minimized with controlled access, landscaping, and vegetative screening. Careful planning is also important to avoid locating such facilities where they would degrade the existing natural environment.

Most industry in the unorganized areas is related to wood production. Chipping mills and saw mills of various sizes and types operate in Nashville Plantation, Drew Plantation, Highland Plantation, Allagash, Edmunds Township and Little Squaw Township. There are also some small, home-oriented manufacturers such as toymakers, potters, weavers, and furniture makers.

Although interest in the state's metallic resources is increasing (this prospect is discussed in the mineral resources section of this plan), commerical mineral extraction currently plays only a minor industrial role. Some sand and gravel extraction is carried out, mostly for road construction and maintenance, but also for general construction in the region. Approximately 10,000 to 15,000 tons of peat are harvested statewide each year as well, primarily for horticultural use.

Transportation

The dominant transportation mode in the jurisdiction is road travel. Of the estimated 11,500 miles of roads, only about 1,500 miles are public highways. The roughly 10,000 miles of private roads, used primarily for forestry operations, range in quality from being easily passable by two-wheel drive vehicles to barely passable by four-wheel drive vehicles.

Since the cessation of log driving on the state's rivers, construction of these private roads has increased markedly. Road building has also accelerated in conjunction with the spruce budworm outbreak as efforts are made to harvest affected and susceptible stands. The Maine Paper Industry Information Office estimates that in recent years 1,000 miles of haul roads have been built in Maine annually by the forest products industry. However, the pace of road construction is declining.

Based on experience, road and skid trail construction have been implicated in the vast majority of the reported erosion problems in harvested areas. Yet well-planned, adequately built roads can minimize erosion and sedimentation problems, improve harvesting conditions and be a better long term investment. The Commission's guidelines for its Land Use Handbook, Section 6, "Erosion Control on Logging Jobs", coupled with the Commission's standards for protection zones, describe methods to mitigate the negative environmental impacts of road and skid trail construction.

While some of the roads built for logging are gated and others are permanently closed after harvesting, according to the Maine Paper Industry Information Office approximately 98% remain available for public use. In some cases, heated controversy can arise over the closing or gating of private roads to public use. Yet perhaps the greatest, long term concern associated with the expanding haul road system is its impact on previously inaccessible, wilderness-like areas. The resulting developmental and land use pressures and impacts on sensitive areas may be serious, but are difficult to predict and protect against, particularly in light of the statutory limitations imposed upon the Commission's authority to regulate haul roads in management zones.

Waste Disposal Facilities

Waste disposal includes the treatment and discharge of sewage, solid, agricultural, and hazardous wastes. A major consideration in waste disposal is soil suitability. Some soils, such as flood plain soils, peat, and muck, are unsuitable for on-site sewage and solid waste disposal. Others, including shallow soils atop bedrock, soils with seasonally high water tables, and soils with extremely slow or rapid permeability, cannot be used for waste disposal unless special techniques are applied. Sometimes alterations such as filling, which can make a site suitable for on-site sewage disposal, can cause unacceptable environmental changes. In other cases, the cost to install and maintain an acceptable disposal system on fragile soils is prohibitive.

By far the most common method of domestic sewage disposal in the jurisdiction is private, on-site, subsurface disposal. When reviewing applications for new dwellings, the Commission is particularly concerned with protecting water quality and public health. For this reason, the Commission applies the Soil Suitability Guide, the State Subsurface Wastewater Disposal Rules, and minimum lot size requirements to assure that disposal facilities are located on suitable soils and are properly designed and engineered. The lot size requirement assures that adequate land is available to accommodate the development, including the sewage disposal facilities. Minimum lot sizes are based on the soil type and waste disposal plan, but range between 20,000 square feet (½ acre) and 2 acres. Section 4 of the Land Use Handbook, "How to Apply for a LURC Building Permit" contains useful information on the selection and placement of subsurface sewage disposal systems.

Many existing structures, built prior to the enactment of the Land Use Regulation Law, are on inadequately sized lots, have soils unsuitable for waste disposal, or have inadequately designed or located sewage systems. When these structures require rebuilding or major renovation, the Commission applies reasonable requirements to upgrade the existing system so that future problems are minimized.

Solid waste disposal is handled in a vari-

ety of ways. Plantations run their own solid waste facilities or pay to use facilities in neighboring towns. In the unorganized townships, county commissioners must provide for solid waste disposal. Those on the periphery of the jurisdiction tend to use landfills in nearby organized towns.

The Commission's standards outline methods for disposing of agricultural wastes. Disposal of hazardous and industrial wastes is subject to Department of Environmental Protection regulations.

Public Utilities and Services

The Commission's policy of encouraging new development adjacent to existing development or in areas already having public services generally keeps the cost of supplying public utilities and services as low as possible. This policy is consistent with the Commission's intent that needed public services be available without unreasonable expense.

In addition to arranging for solid waste disposal, county commissioners also provide for road maintenance (including snow removal) and municipal and residential fire protection in unorganized townships. Frequently, this is contracted with nearby organized municipalities. Forest fire protection is provided by the Department of Conservation, Maine Forest Service. County police departments, the Maine State Police and plantation police are responsible for law enforcement. Public education is available either from State operated schools or from adjacent educational units.

Water, necessary for fire fighting and daily living, is abundant in the jurisdiction. Few housing units are connected to public water supplies. Many people rely on individual wells or springs, and others carry in drinking water and use surface water for their other daily needs.

Except for standards which set minimum distances for wells from sewage disposal beds and privies, there are no State permit requirements for establishing new individual wells. In older subdivisions where housing units are served by individual wells, there is often no water supply for fire fighting. Large, new developments and subdivisions are required by the Commission to provide for an adequate water supply for daily and fire fighting purposes.

Most permanent homes have electricity and telephones, but a substantial percentage of recreational homes have neither. Extending these services to an area may have some significant land use impacts which the Commission must consider in determining whether a proposal is environmentally sound. One problem is the visual impact of the clearings associated with above-ground distribution lines. Secondly, introducing electricity can substantially increase sewage generated at a site because electric pumps facilitate water use. As a result, sewage systems may be rapidly overtaxed. This is particularly problematic in old lakeshore developments where the camps often have inadequate septic systems, located close to shore on poor soils.

Extending utilities into previously remote areas carries with it the potential for vastly intensified future developments. This may harm the wildlife, water quality, and recreation resources of an area, and is a matter of concern to the Commission in connection with utility line extension proposals.

Areas of Significant Development

Development in the jurisdiction has generally been concentrated along shoreline areas, around ski resorts, and near organized towns. The first Comprehensive Land Use Plan identified five regions of rapid growth: Rangeley Lakes (Western Mountains); Carrabassett Valley; Moosehead Lake; and scattered communities in Northern and Eastern Maine.

Examination of permits approved by the Commission over the past five years indicates that three of these areas have continued to grow.

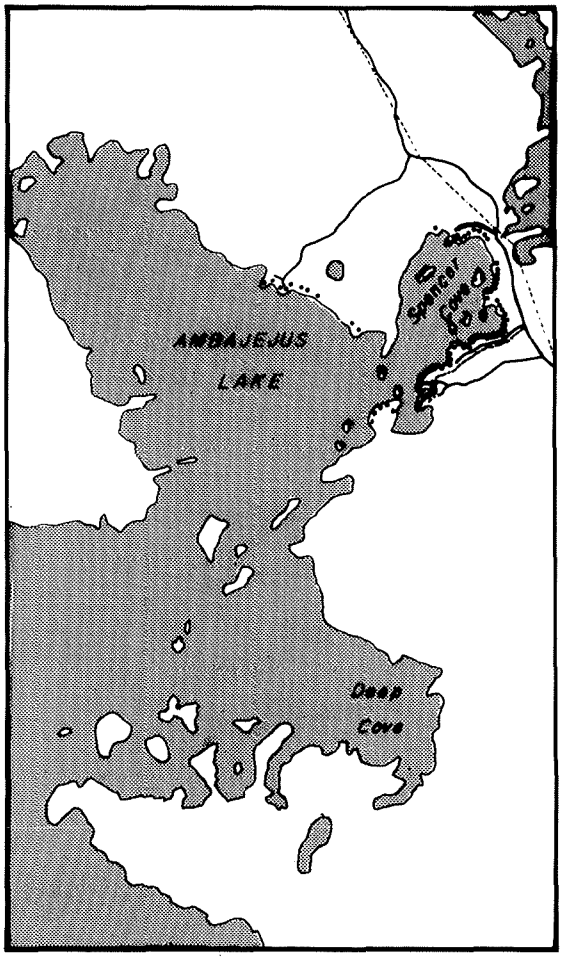
1. **Western Mountains**
   The multi-recreational resort nature of this region, which includes the Rangeley Lakes and Saddleback Mountain Ski Area, has made it attractive for residential development. Rangeley and Dallas Plantations have been the focus of most recent building activity. While seasonal homes represent the major development trend, year round housing construction is also prominent due to the area's proximity to populated, organized towns and woods industries.

2. **Carrabassett Valley Region**
   Recent growth in the Carrabassett Valley region is primarily recreation related. The Sugarloaf U.S.A. ski resort provides the stimulus for most development activities. While the Town of Carrabassett Valley is no longer within LURC jurisdiction, growth has continued to spill over into several nearby, unorganized areas. These areas include Coplin Plantation, and Wyman, Salem, and Freeman Townships.

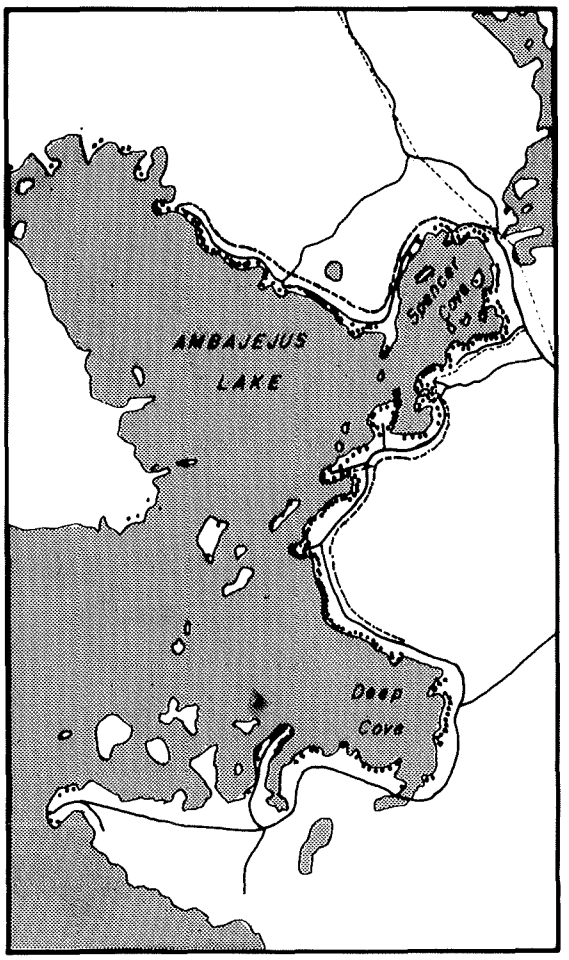
3. **Northern Maine**
   Development within plantations and neighboring unorganized townships of Northern Maine is closely associated with adjacent, incorporated towns. Permanent single family homes are the major building permit activity. Allagash, Connor, Wallagrass and Winterville are the most rapidly growing areas. The area north and west of Caribou contains about one-half of the total population of the jurisdiction.

In addition to these three concentrated growth areas, there are isolated pockets of notable growth. These include permanent home development in Albany Township in Oxford County; Baring Plantation in Washington County; and Cary Plantation in Aroostook County. Primarily permanent, but also seasonal, home development has taken place in Mt. Chase, Penobscot County and Trescott and Edmunds Townships in Washington County. Development in these communities, like those in Northern Maine, is closely associated with adjacent, incorporated towns. Significant amounts of seasonal camp building are occurring in Carrying Place Township in Somerset County; T41 MD BPP in Hancock County; Indian Purchase T4 in Piscataquis County, and on Ambajejus Lake, T1 R9 WELS in Piscataquis County (see figure 8).

Figure 8
AMBAJEJUS LAKE DEVELOPMENT GROWTH, 1953-1981



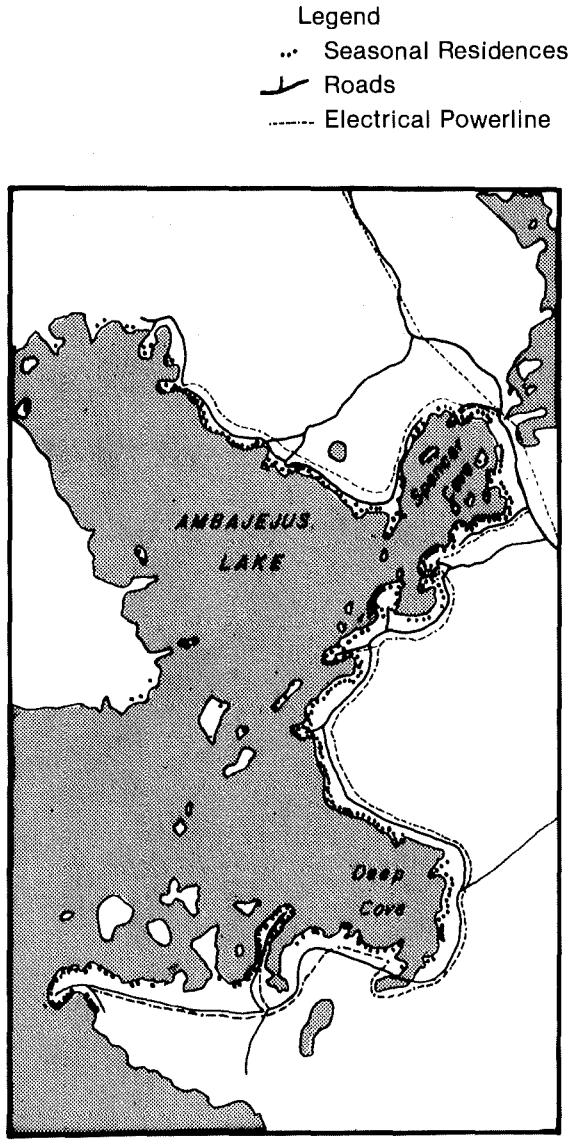
Early in the 1950's, Great Northern Paper Company began leasing lots for seasonal homes around Spencer Cove at Ambajejus Lake (T1 R9 WELS in Piscataquis County). As the first camps were built, Bangor Hydro-Electric Company extended electrical service into the area.



Throughout the 1960's, growth was explosive. Seasonal camps and utilities extended up and down the shorelines from Spencer Cove, largely following roads built by Great Northern for forest management. Many lots in the Deep Cove area, however, had only water access until the late 1960's, when the road was extended to the western point seen here.

Source: Great Northern Paper Company, Camp Lot Location Maps, 1953 and 1962; Bangor Hydro-Electric Company; Maine Land Use Regulation Commission, Development Review files, 1981.

Development Review Data



Over the 10 year period of the Commission's existence, development expansion into new shoreline areas has appreciably slowed. Instead, new growth has largely been confined to filling in previously subdivided areas, especially around Deep Cove. In 1981, after carefully weighing the environmental impacts, the Commission permitted the expansion of electrical service into Deep Cove. Many individual camp owners have since received permits allowing them to connect to electrical service.

The Commission regulates land use activities in a number of ways. All land within the jurisdiction lies in one of three general zoning categories — development, management, and protection. Each of these zones in turn is divided into a number of subdistricts. In order to protect the resources identified in each of these subdistricts, particular land use activities are either prohibited, permitted by notification according to specific standards, or permitted after a permit application has been approved.

The Commission is able to keep abreast of activities in the jurisdiction by monitoring notifications, permit applications, rezoning petitions, and enforcement problems.

Notifications

Timber harvesting is by far the major use of land in the jurisdiction. In order to allow harvesting to be carried out with minimal interference, most of the land in the unorganized areas has been classified in the general management zone. In this subdistrict, forestry related activity is unregulated under the Commission's law.

Harvesting and related activities (including bridge and road building) in most protection zones do not require permit review as long as the activities conform to standards and the Commission has been notified. Notifications are also required for cutting in deer yards where a cutting plan has been agreed upon between the landowner and the local state wildlife biologist. Over the past five years, the Commission has received approximately 500-800 notifications per year. In addition to its usefulness for planning purposes, enforcement personnel use this information to carry out inspections and monitoring flights to assure compliance with standards.

Permits

From 1977-1981, the Commission issued 1,954 building and other permits. This represents a modest increase over the number issued during a comparable period from 1972 to 1976. The following table presents a breakdown of the types of permits which have been issued.

Permits Issued by LURC, 1972-1981

	Mid-1972 - March 1976	1977-81	Average Per Year 1972-76	1977-81
Building Permits for single family dwellings	865	1,052	231	210
Subdivision Permits	64	26	17	5
Forestry Permits	129	306	34	61
Zoning Amendments	24	91	6	8
Utility Line Permits	8	106	2	21
Road Permits	8	24	2	5
Bridge Permits	14	28	4	6
Other Development Permits	75	321	20	64
TOTAL	1,185	1,954	316	380

Three reasons are postulated for the increase in permit activity in recent years: (1) a greater enforcement and education effort has resulted in increased compliance with permit requirements; (2) there has been a significant increase in timber harvesting permits (usually to exceed protection district standards) because of the need to salvage budworm infested areas; and (3) the growing number of development permits issued in recent years may reflect a gradual increase in development activity generally throughout the jurisdiction.

Building Permits

Building permits constitute the major portion of the Commission's permit workload (see figure 9). Of the 1,052 building permits issued for single family dwellings between 1977-1981, 317 were for year round homes, 214 for mobile homes, and 521 for seasonal camps. Since mobile homes are usually year round dwellings, the breakdown of building permits is fairly evenly distributed between permanent and seasonal homes (see figure 10). The typical lot size for each dwelling ranges from the ½ acre (20,000 square foot) minimum to 2 acres. The number of new dwellings for which permits were issued has remained relatively stable over the past ten years.

Subdivision Permits

When a land parcel is divided for the purpose of selling three or more lots in any five year period and the resulting lots are less than 40 acres each in size, a subdivision permit is required. Twenty-six permits, representing 198 lots, were issued between 1977-81, down from 64 permits during the preceding time period.

Three factors are considered important in this permit decline:

- During the first five years, owners who had subdivided their lands prior to the Commission's formation and held unsold lots after 1971 had to apply for a subdivision permit to sell the remaining lots. Therefore, the 64 permits granted in the first four years represented new subdivisions initiated in the early 1970's as well as those begun earlier but not completed before the 1971 enactment of the Land Use Regulation Law.
- The economic climate of high interest rates has forced a gradual reduction in the demand for new house lots, particularly for seasonal use.
- The large corporate landowners within the jurisdiction have recently shown reluctance to open up new forested areas for housing and camp development.

Figure 9

LURC BUILDING/SUBDIVISION PERMITS, 1977-1981

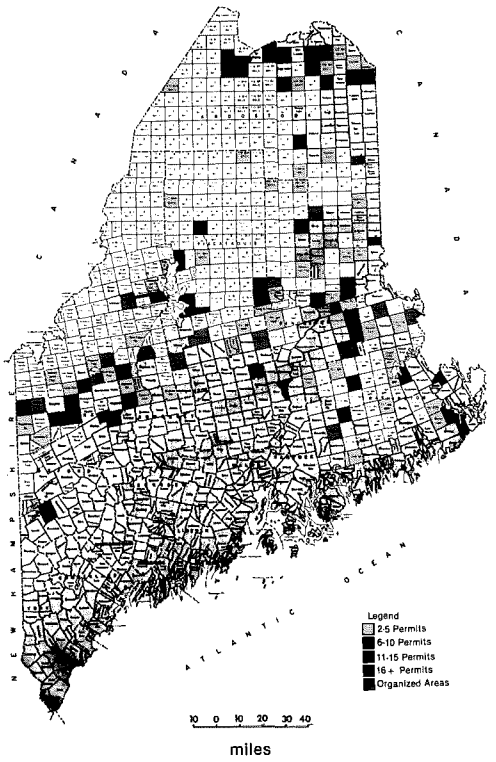


Figure 9. Based upon building and subdivision permits issued between 1977 and 1981, most recent development in the jurisdiction has concentrated along shoreline areas, around ski resorts, and adjacent to organized areas of the State.

Source: Maine Land Use Regulation Commission, Development Review files, 1977-1981.

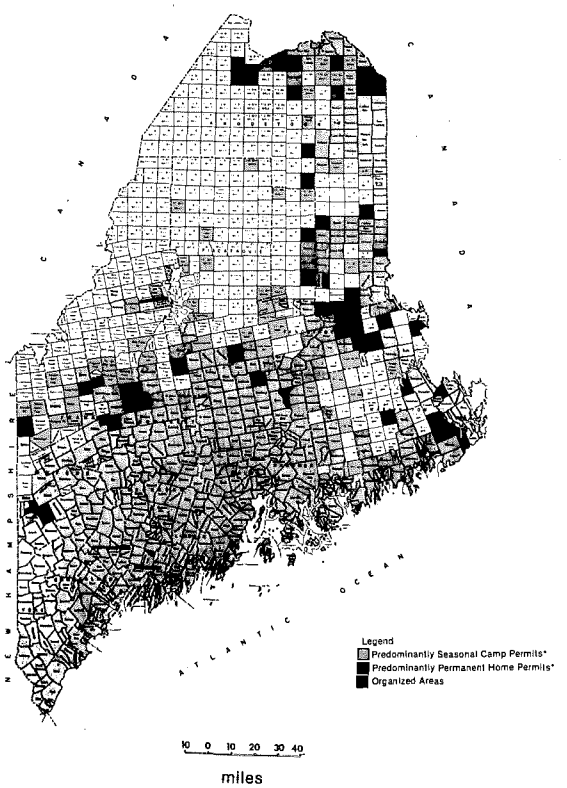


Figure 10

SEASONAL AND PERMANENT RESIDENTIAL PERMITS, 1977-1981

Figure 10. Most seasonal home building in the jurisdiction is associated with the recreational resources provided by lakes and mountains. Permanent home construction occurs predominantly in areas near organized towns where community services are more readily available.

Source: Maine Land Use Regulation Commission, Development Review files, 1977-1981.

*Excludes townships with 0-1 permits

Forestry Permits

As stated before, forestry operations within the vast part of the jurisdiction do not require permits as long as performance standards are followed in protection districts. Permits are required for cutting in development districts, in high mountain areas (above elevations of 2,700 feet), on steep slopes, in recreation protection subdistricts, in deer yards where an agreement cannot be reached with the local state wildlife biologist, and when forestry activities will exceed the allowable limits under the standards.

The spruce budworm epidemic, with its resulting spruce and fir mortality, has caused a marked increase in forestry permit applications in recent years. Shorelines are particularly susceptible to budworm damage since they do not receive insecticide treatments. Landowners have increasingly requested that cutting of infested trees be allowed in excess of the maximums allowed in the standards, and the Commission has usually responded favorably, but with due regard to environmental precaution, in these instances.

Until 1977 permits were required to cut in all deer yards and a substantial number were issued for that purpose. Since then, this permit requirement has been replaced by a system where the land manager meets on the site with the regional wildlife biologist from the Department of Inland Fisheries and Wildlife, and together they work out a cutting plan. The Commission's staff reviews the plan primarily for enforceability and notifies the land manager only if it is not acceptable.

Zoning Amendments

Zoning amendments have been implemented for a wide array of reasons, but most rezonings occur because of a need to correct minor zoning errors and inconsistencies, to create new development zones for subdivision and commerical/industrial proposals, to remove or adjust deer wintering area zones, or to apply more protective zoning on areas, such as river corridors, recognized as having particularly important recreational and natural public values.

Utility Line Permits

Utility line permits are required for telephone or power lines extended more than 1000 feet from the nearest existing lines, except when the new line is within a road right-of-way. In addition, as of 1981, a connection permit is required for connections to these line extensions. Since most line extension permits are issued for service into older unapproved subdivisions, the connection permit allows the Commission to evaluate the effect that electricity, with its attendant increase in water use and sewage disposal needs, will have on water quality. Connection permits represent the bulk of the utility line permits.

Road Permits

The bulk of the road permits are issued to the Maine Department of Transportation for construction and major reconstruction and realignment of public roads. Except for those located in protection zones, the Commission does not have statutory jurisdiction to require permits for or to regulate private haul roads. The majority of roads in protection zones are built in accordance with performance standards, without the need for a permit. Where these standards cannot be met, the forest landowner applies for a forestry permit.

Bridge Permits

A permit is required to build bridges over major rivers (rivers draining 50 square miles or more), or when the Commission's standards will not be met for bridge construction on minor rivers and streams. While most bridge permits have been issued for haul roads, the Commission has granted a few of these to the Department of Transportation for public roads.

Other Development Permits

Development permits are issued for a wide range of building activities that do not fit into the specific categories described above. These include fire stations, stores, apartments, condominiums, hydropower plants, commercial mining of peat and minerals, telecommunications antennae, campgrounds, and sporting camps.

In addition, permits are required for altering, filling, or dredging lakes, streams, or zoned wetlands. Where appropriate, these permits are administered and issued under a one-stop procedure coordinated by LURC with other state agencies having regulatory jurisdiction.

Permit Disapprovals

Annually, between 2 and 4 percent of all applications are initially disapproved. Nevertheless, it is important to note that all permit approvals are accompanied by conditions assuring an environmentally sound project. The largest portion of permit denials are for single family dwelling applications because of poor soils or failure to meet minimum lot size requirements. Efforts are always made to work out problems with the applicant, usually before a permit is disapproved. The major portion of the disapproved applications are revised to meet environmentally sound conditions, resubmitted, and eventually approved.

The low rate of disapprovals reflects a major effort on the part of the Commission's staff to resolve problems with applicants before an application is finalized. Efforts are made to obtain landowner compliance with conditions that make an application approvable rather than to merely disapprove or return applications.

Enforcement

Violations of the Commission's law appear in three forms:

- activities requiring a permit that have occurred without one;
- activities not in compliance with permit conditions; and
- activities that are not in compliance with standards (usually forestry activities) even though a permit is not required.

A review of the Commission's files, together with results of field inventories and surveys of several townships, yield the following findings:

- Development violations exist throughout the Commission's jurisdiction but are geographically associated with areas of relatively intensive development and relate most often to the construction of dwellings without a permit.

- Land use violations not associated with development are usually forestry-related activities which are not in compliance with LURC standards. These ae fairly uniformly distributed throughout the jurisdiction and can result in major environmental problems, particularly water quality degradation and attendant fisheries impacts.

Recognizing that these violations seriously undermine the effectiveness of the Commission's laws and degrade the resources of the jurisdiction, the Commission authorized the formation of the Division of Education and Enforcement in 1980. Staff members in this division are taking vigorous steps to reduce the number of violations through both education and enforcement efforts. Those efforts include holding educational and training seminars and field visits, investigating reports of violations and reporting those to the Commission for action when appropriate.

In the cases of building without a permit, the violator is encouraged to file an application. Permits are granted where the activity conforms with application requirements or where corrections can be made to bring the development into compliance. In forestry violations, the enforcement staff recommends remedial actions in order to protect the environment. In both instances, violations are handled first with a view to gaining compliance and preventing environmental harm. The Commission handles most violations on a staff level, subject to Commission review and approval. Fines are imposed in matters which warrant them. Where cooperative resolution of the violation cannot be reached, or in cases of severe violations, the matter is referred to the Attorney General for initiation of enforcement action.

Chapter 4

Goals and Policies of the Commission

The Commission's jurisdiction represents a unique resource with important public and private values. There are resource management and recreational opportunities and wilderness experiences that are largely unavailable elsewhere in the Northeastern United States. In order to preserve these and other values, the Commission's statute calls for planning for proper use of the resources and for guiding land use activities to achieve and insure this proper use.

The Commission, then, has a dual mandate with respect to conservation and development in the jurisdiction. It attempts to reconcile the need to protect the natural environment from uses that cause degradation with the needs for traditional, resource-based uses and reasonable, new economic growth and development. This is done by regulating land uses and channeling development so as to minimize their adverse impacts on the natural values of the jurisdiction and to maximize their benefits to residents, visitors, landowners and the state at large.

Actions of the Commission which influence the protection, management and development of the resources of the jurisdiction are guided by the framework of goals and policies set forth in this plan. *Goals* set forth a long-range vision for environmental and social achievements and provide broad directions and purposes for specific policies and actions. *Policies* are specific statements of intent which guide regulatory actions, including those related to the creation and administration of zoning districts and land use standards as well as decisions on land use proposals.

The goals and policies set out below reflect the basic planning and land use aims applied by the Commission. These are the guiding principles for implementation of this plan and for decisions concerning future land use activities in the unorganized areas of the state.

Broad Goals of the Commission

The Commission's policies shall be directed toward the achievement of three broad goals:

1. **Support and promote the management of all the resources, based on the principles of sound planning and multiple use, to enhance the living and working conditions of the people of Maine, to ensure the separation of incompatible uses, and to assure the continued availability of outstanding quality water, air, forest, wildlife and other natural resource values of the jurisdiction.**
2. **Conserve, protect and enhance the natural resources of the jurisdiction primarily for fiber and food production, non-intensive outdoor recreation and fisheries and wildlife habitat.**
3. **Maintain the natural character of certain areas within the jurisdiction having significant natural values and primitive recreation opportunities.**

Specific Goals and Policies of the Commission

The Commission's actions shall be guided by the following goals and policies:

I. Natural Resources

A. Forest Resources

Goal: Conserve, protect and enhance the forest resources which are essential to the economy of the state as well as to the jurisdiction.

Policies:

1. Discourage development that will interfere unreasonably with continued timber and wood fiber production.
2. Protect areas identified as environmentally sensitive by regulating forestry activities, timber harvesting, and construction of land management roads.
3. Review and make appropriate refinements, from time to time, in forest practice standards for protection districts in order to make such standards effective in minimizing environmental degradation. Standards shall be responsive to the needs of private land management and to the public need for adequate timber resources to support the economic base of the state.
4. Monitor the installation of new road networks in order to anticipate and plan for future growth and public access and use in appropriate areas.
5. Allow harvesting of dead and dying trees resulting from budworm infestation or other causes, consistent with the Commission's responsibilities for protection of significant natural resource values and uses.
6. Discourage land uses that are not essential to forest management or timber production on highly productive forestlands.
7. Provide an educational program to guide land management, including road construction, in an environmentally sound manner.
8. Encourage scientific research and management of forest resources in relation to other important resources.

B. Recreation Resources

Goal: Conserve and protect the natural beauty and unspoiled qualities of the waters, shorelands, mountains, plant and animal habitats, forests, scenic vistas, trails, and other natural and recreational features in order to protect and enhance their values for a range of public recreational uses.

Policies:

1. Protect remote, undeveloped and other significant recreation areas, including such areas around rivers and streams, trails, ponds and lakes, to protect their natural character for primitive recreational activities such as canoeing, hiking, fishing, and nature study.
2. Encourage diversified, non-intensive, nonexclusive uses of recreational resources.
3. Provide opportunities for well-planned recreational developments in appropriate areas when environmental protection, public need, and viability can be adequately demonstrated.

C. Water Resources

Goal: Preserve, protect and enhance the quality and quantity of surface and ground waters.

Policies:

1. Regulate water and land uses to reasonably avoid degradation of water quality and to ensure that

human, fish, wildlife and plant habitats are not unduly harmed.

2. Regulate dredging, filling, draining, and alteration or development of bottom, shoreland and wetland areas in order to prevent water pollution, destruction of fish, plant and wildlife habitat, disruption or pollution of ground water tables and aquifer recharge areas, and disturbances to recreational and aesthetic values.
3. Prohibit new structures in flood prone areas that would be harmed under flood conditions.
4. Prohibit buildings, disposal of sewage, sludge or manure, and other inappropriate land use activities on wetlands.
5. Conserve and protect lakes, ponds and rivers and their shorelands which provide significant public recreational opportunities.
6. Permit a reasonable range of development and land uses on lakeshores in order to accommodate a range of recreational opportunities important to Maine people.
7. Administer site development standards, including appropriate setback requirements, to protect water quality, water quantity, recreational and aesthetic values of lakes and rivers.
8. Encourage cooperative uses of public and private docks, water access points and boat launching sites.
9. Control land uses on identified aquifers and their recharge areas, and along water bodies having the potential for water pollution problems, in order to avoid adverse effects on water quality or quantity.

D. Fisheries and Wildlife Resources

Goal: Conserve and protect the aesthetic, ecological, recreational, scientific, cultural and economic values of wildlife and fisheries resources.

Policies:

1. Regulate land use activities to protect habitats, including deer wintering areas and coastal bird nesting sites, ecosystems, food sources and other life requisites for wildlife species.
2. Administer zoning and regulatory programs to protect wildlife habitat in a fashion which is balanced and reasonably considers the management needs and economic constraints of landowners.
3. Regulate land use activities to protect habitats for fish spawning, nursery, feeding, and other life requisites for fish species.
4. Encourage management of fisheries and wildlife resources to maintain their habitats, diversity, and populations.
5. Support cooperative management agreements and research projects among landowners, public agencies, individuals and groups designed to protect and study fisheries and wildlife habitats.

E. Agricultural Resources

Goal: Conserve and protect farmlands and other agricultural resources.

Policies:

1. Discourage land uses which can be destructive of prime, highly productive and other significant farmlands, and encourage agricultural management in areas currently being farmed.
2. Regulate agricultural practices which can cause accelerated erosion, sedimentation or pollution in order to protect soil and water resources.

F. Soil and Geological Resources

Goal: Conserve soil and geological resources by controlling erosion, by protecting areas of significant geo-

logical formations, and by allowing environmentally responsible utilization of these resources.

Policies:

1. Regulate land uses to protect areas identified as important natural geological formations.
2. Regulate land uses in areas with identified topographical or geological hazards, including areas with fragile soils, steep slopes, high elevations, or seismic faults.
3. Administer standards for structural development and other land uses based on soil suitability.
4. Administer performance standards for timber harvesting, road construction, gravel extraction, stream crossings, agricultural practices and other land use activities in order to control potential causes of accelerated soil erosion.

G. Air Resources

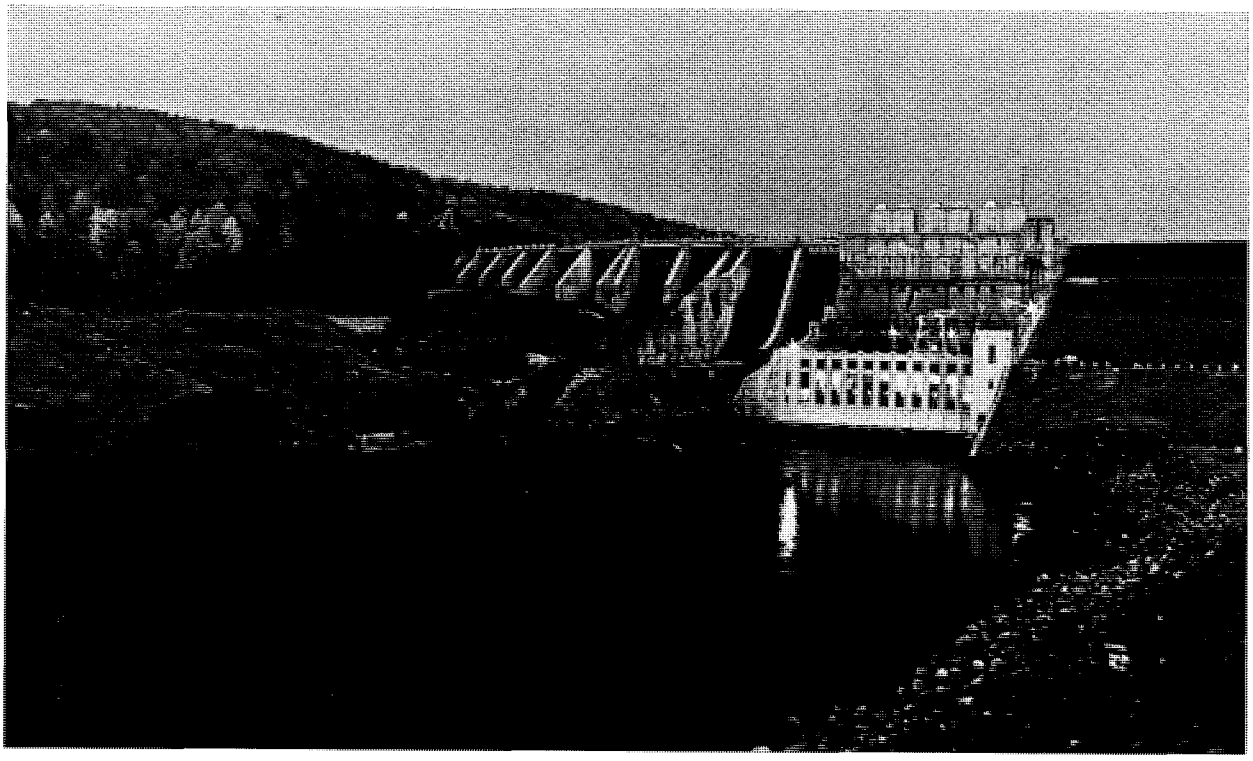
Goal: Protect and enhance the quality of air resources throughout the jurisdiction.

Policies:

1. Require compliance with all current state and fedeal air quality standards; require compliance with more stringent standards where necessary to preserve the air quality or unique values of identified sensitive areas.
2. Encourage state, federal and international initiatives directed at reducing emissions of air pollutants contributing to acid precipitation.

H. Scenice Resources

Goal: Protect quality, scenic character and natural values by fitting proposed land use activities harmoniously into the natural environment



and by minimizing adverse aesthetic effects on existing uses, scenic beauty, and natural and cultural resources.

Policies:

1. Encourage concentrated patterns of growth to minimize impacts on natural values and scenic character.
2. Regulate land uses generally in order to protect natural aesthetic values and prevent incompatibility of land uses.
3. Protect the scenic values of coastal, shoreland, mountain, recreation and other scenic areas.
4. Regulate forestry activities in important recreational and scenic areas to protect aesthetic qualities.

I. Energy Resources

Goal: Provide for the environmentally sound and socially beneficial utilization of indigenous energy resources where there are not overriding, conflicting public values which require protection.

Policies:

1. Encourage energy conservation and diversification and the use of indigenous renewable resources to increase the state's energy self-sufficiency.
2. Prohibit energy developments and related land uses in areas identified as environmentally sensitive where there are overriding, conflicting environmental and other public values requiring protection.
3. Permit new energy developments where their need to the people of Maine has been demonstrated and they are sited, constructed and landscaped to minimize intrusion on natural and human resources.
4. Review environmental and social impacts of energy development and establish permit conditions which minimize and mitigate adverse effects of such developments.
5. Prohibit hydropower development on river stretches identified as having

overriding recreational or natural values.

6. Encourage development of new, small hydropower projects and reconstruction of existing hydropower projects where these can be undertaken in an environmentally sound

J. Mineral Resources

Goal: Provide for the environmentally sound and socially beneficial utilization of mineral resources where there are not overriding, conflicting public values which require protection.

Policies:

1. Permit exploration for mineral resources provided no more than minimal disturbance is caused to natural and cultural resources.
2. Permit commerical extraction of mineral resources where a benefit to the people of Maine has been demonstrated and the operations are sited and developed in a fashion which minimizes adverse effects on other land uses and natural resources.
3. Permit major mining developments only in areas zoned for industrial development, and provide a rezoning procedure for this purpose which broadly considers community impacts and competing uses and public values.
4. Regulate mining operations to minimize water, air, land, noise and visual pollution, to assure public safety and health, and to avoid unduly adverse impacts on fisheries, wildlife, botanical, natural, historic, archaeological, recreational, and socioeconomic values.
5. Require effective monitoring and reclamation of mining sites.
6. Provide for small sand and gravel extraction operations used primarily for the construction and maintenance of roads in most areas without rezoning, but subject to compliance with performance standards designed to avoid undue environmental harm.
7. Guide development of peatlands away from those having botanical, wildlife, fisheries, geological, water resource, recreational, scientific, cultural or other public values of overriding significance.

K. Special Resources

Goal: Protect and enhance identified features of natural and cultural significance.

Policies:

1. Identify and protect unique, rare, endangered, threatened, unusual, representative, or critical natural or cultural resources to preserve their ecological, scientific, scenic, social or educational values.
2. Protect and conserve the special scenic, recreational, ecological, historic, archaeological and other natural and cultural resources of coastal islands.

II. Development

Goal: Guide the location of new development in order to protect and conserve forest, recreational, plant or animal habitat and other natural resources, to ensure the compatibility of land uses with one another, and to allow for a reasonable range of development opportunties important to the people of Maine.

Policies:

1. Discourage growth which results in scattered and sprawling development patterns.
2. Require that provision be made for fitting development harmoniously

into the existing natural environment.

3. Administer zoning and land use standards to guide development; take specific site suitability characteristics into account during permit application review.
4. Encourage orderly growth within and proximate to existing, compatible developed areas, particularly near towns and communities.
5. Allow well planned development in other areas subject to site plan review, where (a) the area proposed for development is appropriate as a new development center, (b) there is a demonstrated public demand for and benefit from the proposed development in that area, (c) there is a demonstrated need for locating the development not proximate to established developed areas; (d) the productivity of existing forest and agricultural resources in the jurisdiction is not unduly harmed; (e) recreational resources and uses are not unduly harmed; (f) wilderness, natural and plant or animal habitat values are not unreasonably degraded; and (g) needed services are available or can be provided without unreasonable financial, social or environmental costs to the public.
6. Discourage the construction of major new public access ways which would result in the loss of significant wilderness values and the natural character of remote areas.
7. Permit subdivision developments only in areas zoned for development.
8. Permit a mixture of types of land uses within development zones

where they are compatible.

9. Limit residential densities on the basis of soil suitability and other site limitations.
10. Prevent the degradation of natural and cultural values resulting from cumulative impacts of incremental development.
11. Require the use of buffers, building setbacks, and landscaping to minimize the impacts of land use activities upon one another and to maintain the scenic quality of shorelines and roadways.
12. Require that developments provide for adequate parking and traffic circulation.
13. Require that new utility lines, pipelines, and public transportation rights-of-way and their associated facilities be located away from sensitive areas or be constructed and landscaped so that they do not degrade natural values.
14. Limit the number and size of signs in order to prevent undue or hazardous visual impacts.
15. Regulate the disposal of sewage, solid waste, manure, and septic sludge and prohibit their disposal in flood prone areas, on unsuitable soils, or in other inappropriate areas.
16. Encourage development that is energy efficient and that incorporates best practical technologies to conserve energy.

III. Enforcement and Education

Goal: Administer an effective enforcement and education program in regard to the laws, regulations and standards of the Commission, in order to assure landowner and public awareness and compliance.

Policies:

1. Carry out a balanced but vigorous enforcement effort to identify, investigate, and pursue significant violations of the laws and legal requirements administered by the Commission.
2. Train and utilize the field staffs of other State agencies in order to disseminate information to the public and to report compliance problems to the Commission.
3. Hold landowners and land managers primarily responsible for land use activities resulting in violations taking place on their lands.
4. Conduct educational programs for citizens, landowners, land managers, contractors, woods workers, lawyers, realtors and others concerning environmentally sound land use practices and the laws and legal requirements administered by the Commission.

Chapter 5

Issues for the Present and the Future

The Commission's experience with zoning and project review has shown its regulatory tools to be effective in protecting important resources and guiding development in the jurisdiction. Within the broad guidelines established by its first Comprehensive Plan, the Commission has altered and refined both its zoning standards and project review procedures from time to time over the years in a number of substantial ways to provide more effective and efficient methods of protecting resources and guiding growth. However, nothing remains static. New land uses and natural changes to the resources require new responses. Accordingly, within the guidelines established by this revised plan, the Commission will continue this process of review and improvement of its regulations, when appropriate to resolve identified problems and to better carry out its responsibilities.

This chapter highlights some of the specific subjects and issues, many of them previously discussed, which the Commission intends to scrutinize in the coming years following adoption of this revised plan.

River Protection Issues

To an increasing number of people it is clear that rivers possess special resource values deserving of special attention. Interest in the utilization and protection of rivers in Maine has been growing rapidly in the past few years. A great deal of this interest has focused on the rivers in LURC jurisdiction, as many of them possess a diversity of outstanding recreational and development values and opportunities unique to the Northeastern United States. One of the most difficult resource conflicts associated with rivers is hydropower development, although other forms of development and land use may also be compromising of the recreational and natural values of rivers.

To date, the Commission has acted to protect several recreationally significant river stretches in the jurisdiction both through its zoning program and in its project review decisions. Special protection (P-RR or P-RP) zoning has been applied to more than 275 miles of waterways. This zoning prohibits most forms of residential, commercial and industrial development, subdivisions, water impoundments (dams), utility projects and mining. It also provides for regulation of timber harvesting and restricts construction of new roads, bridges and gravel pits.

Another major step forward has been the recent issuance of the Maine Rivers Study. That study, for the first time, provides a comprehensive assessment of the recreational and natural values of Maine's rivers as well as guidance as to river protection priorities. The Governor's July 1982 Executive Order on Maine Rivers Policy has taken this study one step further by declaring it State policy to protect the most valuable rivers from new dams and other forms of incompatible development.

Still, this is only a start. A tremendous amount of work remains to be done in order to provide and carry out a strategy for the protection and the responsible use of Maine's rivers. For its part, the Commission is and will be examining possible changes to its standards to fully implement the recommendations of the bold, new State policy articulated in the Maine Rivers Study and Executive Order. Among other things, the standards should make it clear that the many river stretches within the jurisdiction identified as meriting special protection in the study and order would qualify as appropriate for Recreation Protection (P-RR) zoning. In addition, other rivers possessing significant public values should be protected in a carefully balanced way. The Commission's intention here would be to protect the natural and recreational values of the most significant river corridors while allowing for a continuation of responsible land management practices in those areas. Meanwhile, environmentally sound hydropower development should be encouraged along rivers not having significant recreational and natural values.

Further, in its project review decisions concerning development proposals affecting rivers in the jurisdiction, the Commission will be guided by the Maine Rivers Policy and will closely consider the information of the Maine Rivers Study as well as other river studies. The Commission will also continue to maintain a leadership role among State agencies in coordinating regulatory review of development proposals on rivers within the jurisdiction.

Lakes Protection Issues

Lakeshores are a prime attraction for development and, simultaneously, among the areas most sensitive to development. As a result, land use conflicts along lakes are often particularly acute. Three issues have been identified pertaining to future protection by the Commission of lake and shoreland areas.

Lakeshore Development Zoning

Currently, most lakeshore areas in the jurisdiction are zoned Great Pond Protection (P-GP). This zone allows many forms of traditional shoreland uses, including camps on existing or new large lots, but prohibits new subdivisions and most commercial and industrial activities. Heavier development, including new subdivisions around lakes, is allowed only where the lakeshore is placed in one of the Commission's conventional development zones. Yet the special sensitivity and significant development pressures around lakes suggest that special consideration should be given to the issue of lakeshore development zoning.

Two very different lake zoning schemes have been recommended to and debated by the Commission in the past few years in response to this issue. One system has been proposed by which each of the 3400 lakes within the jurisdiction would be classified according to its development capability. The drawbacks to this proposal are the lack of specific information available for each of these lakes and the extreme practical difficulties in implementing such an elaborate approach. The second scheme studied relies heavily on natural limitations on lakeshore development, particularly soils and slopes unsuitable for building, for automatically securing the preservation of certain lakeshore areas in their natural state under a relatively simple lakeshore zoning approach. This simpler approach has the advantage of being self-implementing, when coupled with regulations on development siting equivalent to those already applied by the Commission as well as the types of regulatory changes contemplated in the following two sections.

After examining these alternatives, for the present the Commission has determined that it will follow the second approach to controlling lakeshore development. However, as discussed later in this chapter, the Commission may be reviewing its approach to development zoning generally throughout the jurisdiction. Lakeshore development zoning will be further studied within that larger framework.

Water Quality Limiting Lakes

To keep an eye on potential overdevelopment of lakeshore areas which might threaten water quality, the Commission has used a formula to identify those lakes which may be particularly susceptible to water quality degradation. These are referred to as Water Quality Limiting Lakes (WQLL). This designation is not a zone but only a red flag which alerts the Commission to the need for applying special care in reviewing the impacts of proposed development on these especially sensitive lakes. In appropriate cases, the Commission may require special conditions for development proposals having a high potential for water quality degradation on these lakes.

While there has been little criticism of the broad concept of identifying and protecting water quality limiting lakes, the formula used in the past to determine such lakes is rudimentary and needs considerable refinement. The Commission will examine ways to improve this formula so that it more accurately predicts the degradability of lakes due to land uses within the lake's watershed.

Remote Ponds

To date, the Commission has placed the lands around 175 so called remote ponds into Recreation Protection (P-RR) zones in order to provide for the long term protection of the remote recreational lake experience. The criteria for P-RR remote pond zoning are as

follows: (1) there can be no existing road access by two-wheel drive vehicles during the summer within ½ mile of the pond; (2) existing building within ½ mile of the pond must be limited to no more than one remote camp; and (3) the pond must support a significant cold water game fishery. These criteria may be too narrow and may result in overly limiting the numbers and types of lakes in the jurisdiction which are conserved for the unique remote recreational experience they afford.

In order to insure that this experience be maintained for future generations, the Commission will examine whether this type of zoning should be extended to additional unspoiled lakes in the jurisdiction. For example, by changing the criteria for designating remote ponds to delete the requirement of a cold water game fishery, approximately 200 additional ponds could be so zoned and protected.

Forestry Regulation Issues

Since the forest resource and its uses dominate the jurisdiction, reasonable regulation of forest practices in environmentally sensitive areas is a very high priority of the Commission. The object of this regulatory scheme is to minimize adverse impacts on water quality, fisheries, wildlife, aesthetic and recreational values while allowing for economic utilization of the forest resource. Accordingly, logging, haul road construction and related activities are regulated by performance standards and without the requirement of obtaining a permit within most protection zones. By statute, such activities are not regulated by the Commission within management zones.

After several years of experience, the Commission finds this system to be generally sound but not without need of improvement. Problems have arisen in practical administration of certain of the Commission's standards. At the same time, dramatic changes to the forest resource, primarily the result of widespread spruce budworm infestation, are causing unforeseen management problems for forest landowners while raising regulatory issues which the Commission must address. Finally, intensification of timber harvesting and forest management operations poses issues of importance to the Commission because of the potential impacts on environmental quality and natural values.

LURC Forestry Standards

While the Commission does not contemplate major changes to its regulations of forest practices, certain of these have proven problematical. An advisory team has been assembled to investigate new approaches to these regulatory concerns. The following are among the forestry standards which are currently being reviewed with a view to possible improvement:

- The sizing criteria for culverts and bridges. Some of the alternative sizing criteria for water crossings allowed without a permit under the standards (such as that providing for a 10 year frequency water flow) are problematical in administration, interpretation and enforcement. These should be clarified in order to provide better guidance for landowners and regulators.
- The width of the protection zone (P-SL2) for small streams. This zone, which is 75 feet wide on each side of the stream channel, has been challenged as being too narrow to adequately regulate forestry activities that directly affect stream water quality. The Commission's most recent 208 Water Quality Study shows the need for examining the possibility of widening this zone or otherwise dealing with this problem.
- The option currently in the standards for timber harvesting activities near small

streams, allowing for departure from the usual performance standards where a defined level of water sedimentation is not exceeded. This standard has created significant confusion for operators and requires a degree of sophistication and monitoring effort which does not appear to be practical.

- The standard that calls for the retention of shade along small streams. This standard should be reviewed to see whether it might be more precisely stated.
- The standards for harvesting along larger P-SL2 streams. Many larger streams zoned P-SL2 have important recreational and aesthetic values which may not be adequately protected under the existing requirements.
- The definition of stream channel. The Commission recognizes that practical difficulties may occasionally exist in determining the existence on the ground of very small stream channels and their accompanying shoreland protection zone. Consideration will be given to refinements or alternative approaches which will eliminate uncertainty on this issue.

After gathering input from a variety of sources, including industry representatives, the advisory team will report its findings and recommendations on these and other forestry regulation issues to the full Commission. Based upon these recommendations, and following public hearing, the Commission may seek to revise its regulations.

Spruce Budworm

During recent years, in carrying out its spruce budworm suppression program, the State has exercised care to avoid spraying near significant water bodies. The result has been an increase in spruce and fir mortality along lakes and streams. At the same time LURC standards restrict the amount of harvesting that can be done in these areas without a permit. Similarly, the need for protecting deer wintering areas, which are largely composed of mature spruce and fir, may conflict with the need for salvaging the dead and dying wood in these areas.

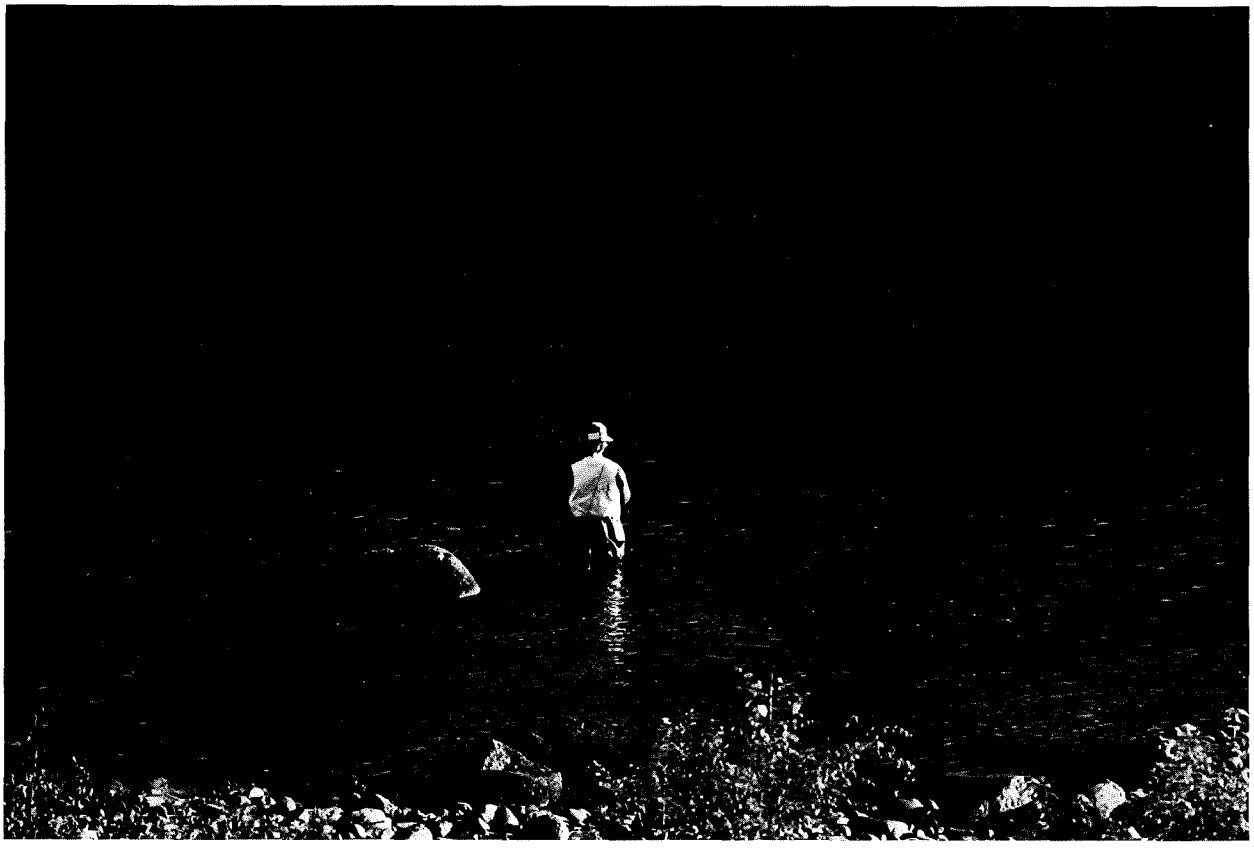
The Commission has set upon an approach for dealing with these problems which provides reasonable flexibility on a case-by-case basis. When a permit application justifies the need for exceeding volume removal standards in a budworm-infested protection zone, the Commission will ordinarily accommodate that need. The Commission's response will normally be to not require the preservation of dead and dying trees in protection zones. Occasional exceptions to this policy may exist in sensitive recreational areas, in high risk erosion areas, or in other areas of unusually high environmental risk.

Intensification of Forest Management

With mill expansions requiring more fiber from a land base which is fixed and a wood supply which is under budworm attack, landowners are increasingly applying management techniques — clearcutting, use of heavy machinery, whole tree utilization, herbicides — that can create conflicts with other values and uses of the forest.

While the Commission recognizes the need for changes in forest management, it remains cautious about possible adverse environmental effects. In the protection zones, where the Commission has jurisdiction over forestry practices, it will continue to establish forest practice standards which are based on best practical management techniques largely designed to minimize erosion and sedimentation problems. The Commission will continue to refine policies which are reasonable in terms of forest conditions and needs, but are at the same time responsive to environmental concerns.

In management zones, where forestry activities do not fall within the Commission's regulatory authority, the Commission will keep abreast of potential environmental effects of new management practices. Regulation of forest management practices in management zones would require amendment of the Commission's enabling statute.



Fisheries and Wildlife Issues

To date, the Commission has applied Fisheries and Wildlife Protection (P-FW) zoning to two types of areas, deer winter habitat and significant colonial bird nesting sites. In recent years, a variety of issues have been raised and extensively debated regarding the deer winter habitat zoning program undertaken by the Commission since its inception in 1971. The Commission has conducted a review of these issues through discussions, meetings, hearings and a major conference in 1981. Based upon this experience, the Commission has adopted a comprehensive set of policies concerning deer winter habitat issues. Those policies set out the Commission's posture of endeavoring to balance the needs for protection of critical deer habitat with the needs for land management flexibility. The complete set of policies is included in this plan as Appendix A.

As development encroaches upon the wildlands with the potential for alteration of critical habitats, the need for protective zoning of other types of significant fish and wildlife habitat is becoming evident. The Commission's standards already contemplate application of protective zoning to other significant habitats. To date, the lack of documentation adequate to define precisely those areas in need of additional protection has been an obstacle. However, as better information becomes available concerning critical habitats, such as salmon breeding areas and eagle nesting sites, the Commission will consider whether protection zoning is appropriate for these additional purposes.

Development Zoning Issues

As discussed in Chapter 3 of this plan, the Commission has a dual mandate with respect to development in the jurisdiction. It attempts to protect the natural environment while also accommodating the need for reasonable growth and development. The zoning scheme the Commission has used to guide development in the unorganized areas has channeled the location and upgraded the quality of development occurring in the jurisdiction over the past decade. At the same time, there are a number of areas in which the Commission should consider improvements, including in the manner by which development zones are defined and set out, as well as the principles used to guide the location of new growth.

Delineating Development Zones

Most development zones have been delineated based strictly on the existence of a relatively few structures within a 500 foot radius. The result is that a large number of relatively small, scattered areas have been designated as development zones, irrespective of their proximity to other development, or the availability of suitable infrastructure or public services to serve existing and future development. There are two concerns here. The principal one is that, inasmuch as development zones are focal points for new growth, the existence of many, small growth nodes encourages scattered sprawl which it is the Commission's policy to avoid. Secondly, development zones have been tightly drawn around most existing patterns of development so that rezoning is sometimes required for many new development activities even in the immediate proximity of existing development.

The Commission may respond to these concerns by considering new zoning schemes to designate development zones in areas comprising bona fide communities or relatively large patterns of development. In this way, fewer but larger areas could be set aside as appropriate nodes for future growth.

Types of Development Zones

Currently, the Commission's standards describe four kinds of development zones, all of them designed around the principle of separation of incompatible land uses. Experience suggests that within the jurisdiction a small, community-based, commercial activity (such as a general store or a gas station) may not be incompatible with, and in fact may enhance, an otherwise residential area. Separation of incompatible development uses is best practiced by segregating heavy industrial or large commercial activities from residential, small commercial and recreational uses. In short, the kinds of development activities allowed in the Commission's current Residential Development (D-RS) zone may be more limited than is appropriate for rural areas. Accordingly, the Commission should consider consolidation of the Residential Development (D-RS) zone with the General Development (D-GN) zone, which allows for a wider range of community-based land uses.

A second issue pertaining to types of development zones is whether the Planned Development (D-PD) subdistrict is useful as it is presently constituted. This zone was originally conceived as a floating zone for major, new development projects (such as a major recreational resort, an alpine ski area, or a large scale industrial complex) which would be established in an area without regard to adjacency to existing patterns of development. While the concept here may remain sound, this zone has never been applied and so its usefulness in its current form is questionable given the Commission's rural jurisdiction and the relatively strenuous procedural requirements for this form of zoning. In response to these concerns, the Commission may consider amending the zone to make it easier to apply or, alternatively, eliminating the zone altogether in favor of other, more workable development zoning techniques.

Principles for Guiding Growth

In the past, three basic propositions have broadly guided the Commission in considering rezoning petitions for new development proposals. Those propositions are (1) that most future development should take place within or adjacent to existing patterns of compatible development, (2) that certain major development proposals may be allowed in undeveloped areas where they depend upon a particular feature unique to such areas, and (3) that applicants for rezoning should demonstrate a need for their development in the locality proposed.

The Commission considers these propositions essentially sound. However, there have been some concerns in applying them. The "adjacency rule" is not sufficiently well defined and, in some cases, does not seem to relate well to the realistic circumstances of a relatively remote and undeveloped jurisdiction. The rule requiring a "particular feature" for creating new development zones in previously undeveloped areas seems too restrictive. The "demonstrated need rule", for the most part, has been limited to requiring a showing of some public need or desire for a particular use within a small, local area. This rule could well be used more expansively, to deal both with regional needs, as well as with needs for new development nodes away from already established settlements.

The policies of this plan attempt to respond to some of those concerns. However, as to others, consideration should be given to making these principles more clearly defined in revisions to the Commission's standards to be examined in the future.

Management Zoning Issues

While the Commission's standards contemplate three separate management subdistricts, only the General Management (M-GN) zone has, in fact, ever been applied. In practice, all areas not placed in protection or development zones have fallen into General Management zones. Consequently, the Commission should review the usefulness of the other two management zones, the Natural Character (M-NC) and Highly Productive (M-HP) Management zones.

Management Natural Character Zone

The Management Natural Character (M-NC) zone was designed originally to preserve large, undeveloped regions in the jurisdiction. The intent was to permit only forestry and agricultural practices and primitive recreation in these areas. However, this zone has never been applied, in part because of a gathering concensus that the zone may be unnecessary, given the range of resource protection already afforded by the Commission's general management and protection zones. Accordingly, the Commission will consider whether this zone has any future usefulness and, if not, the zone will be eliminated.

However, in lieu of applying the M-NC zone, the Commission should at least broadly identify areas within its jurisdiction which possess significant natural, wilderness-like values which ought to be conserved and protected from incompatible kinds of development. The Commission considers such areas to include the Mahoosuc Range, the Lower Dead River area, the Bigelow Range, the Debsconeag Lakes area, the Upper Moose River area, the Gulf Hagas area, and the Deboullie Range. In reviewing development proposals for any of these areas the Commission will give weight to their currently undeveloped, remote, and wild character which is deserving of protection for future generations.

Management Highly Productive Zone

The Management Highly Productive (M-HP) zone was designed to prevent highly productive agricultural and forest lands from being lost to other incompatible uses. However, largely because of an absence of needed information, this zone has never been applied. While reassessing the value of the zone as presently constituted, the Commission nevertheless reaffirms its commitment to maintaining prime and other important agricultural and forest lands. Land uses, including incompatible development and topsoil mining, which could cause irreversible diminution of these relatively scarce and therefore valuable productive lands in the jurisdiction will be strongly discouraged. This policy will guide the Commission as it reviews projects on a case-by-base basis, and while it continues to examine refinement of its standards in connection with this zone.

Mining Issues

The prospect of large scale metal and peat mining projects in the Commission's jurisdiction presents the challenge of facing major, new and previously unfamiliar land uses. These create new economic opportunities for the state while they also pose new concerns for environmental quality and regulation.

Much preparation has been undertaken to address the extensive and complex issues which these kinds of new developments will require. For example, as discussed in Chapter 2, comprehensive application forms have been prepared for both metal and peat mining. The Commission and staff have endeavored to become broadly familiar with the impacts and operations of mining. Consultants, who can provide expert review of extraction plans and environmental studies, have been contracted. Even with these efforts, an enormous amount of work remains if these new prospects are to be faced with confidence.

Metal mining is difficult to plan for, since so little is known about the location and nature of commercially attractive deposits. Furthermore, the volatility of the international metals market makes it especially difficult to be certain of a stable planning and development schedule. As a result of depressed metals prices, preapplication work on the most visible proposed development, the Bald Mountain Project, has slowed markedly. Still, many exploration companies continue to work in the wildlands and large, new finds may be announced at any time.

While the location and economic value of peat resources within the jurisdiction have been studied, very little is known about the natural values of these resources. To provide some guidance to developers, a reconnaissance study of the ecological and cultural values of commercially attractive peatlands should be accomplished statewide. The results of the Commmission's current pilot study of a small group of those high priority peatlands will be useful in this regard. However, much more needs to be done to improve the information base about the ecological values of peat resources. Particular focus should be placed on identifying those peatlands of high ecological value or sensitivity in order that peat development activities may be steered toward other areas.

In anticipation of receiving applications for major metal and peat mining projects during the next few years, the Commission will continue to prepare for the substantial review of complex issues that will be required of such projects. The Commission and staff will continue to improve their knowledge of mining technology and environmental impacts. The Commission will also continue to take a leadership role among State agencies in connection with regulatory review of such proposed projects in its jurisdiction.

Ground Water Issues

Ground waters are a major source of residential and commercial water supplies within the jurisdiction. The Commission recognizes the importance of protecting the quantity and quality of such water supplies. Accordingly, the Commission has created a protection zone (the Aquifer Recharge or P-AR zone) designed to protect these ground water resources. However, due to the inadequacy of currently available information, problems have been encountered in applying this zone to aquifers or aquifer recharge areas in the jurisdiction. The Commission should consider appropriate amendments to the standards for this zoning designation in order to make it more relevant and useful, given the level and type of information available at the current time.

Education and Enforcement Issues

Adherence to environmental regulations is critical if they are to be meaningful. Over the past three years, the Commission has developed a balanced program combining concerted education efforts with a vigorous enforcement posture in order to achieve a reasonable degree of compliance with the law.

Efforts to explain the requirements of the LURC law to the affected public can go far toward preventing violations and environmental degradation. For this reason, numerous training sessions for woods workers, foresters and others have been held and educational booklets have been prepared and distributed.

At the same time, violations of the law cannot properly be ignored. Each year approximately 200 violations of the Commission's rules and regulations are reported, many of these under the Joint Enforcement Agreement between LURC and the Departments of Environmental Protection, Inland Fisheries and Wildlife, and Conservation. All such violations are reported in turn to the Commission, and significant violations are brought to the Commission for discussion and action.

The Commission normally authorizes the staff to negotiate settlement agreements concerning violations of less than severe consequence, with the terms of the settlement subject to the final approval of the Commission. This process is designed to be fair while resulting in expeditious and efficient disposition of enforcement matters. In instances where a staff settlement agreement cannot be readily reached, and in cases involving severe violations and/or environmental damage, the Commission refers the violation to the Attorney General for appropriate legal action.

While this program has increased awareness of the law among the affected public, and numerous violations have been penalized and remedied, efforts must continue to improve compliance. Yet the lack of sufficient staffing is a major constraint to carrying out an adequate and sustained education and enforcement program.

Because of its importance to all of the Commission's objectives and other programs, the Commission will continue to pursue, as a top priority, a vigorous education and enforcement program. Toward this end, the Commission will take the following actions:

1. Efforts will be made to inform landowners, land managers, contractors, citizens, realtors, lawyers, bankers, and others concerning the purposes and requirements of the laws and regulations the Commission administers.

2. The Commission will continue to actively participate in the Joint Agency Enforcement Agreement and to train field personnel of other agencies in order to supplement the work of its very small inspection and enforcement staff.

3. The Commission will continue to hold landowners/managers primarily responsible for assuring that the work of contractors and other operators on their lands is in compliance with the law. Because the independent contractor status of such contractors may impair direct landowner involvement in contractor operations, landowners/managers are strongly encouraged to carefully inform and contracturally require adherence of operators in accordance with LURC standards. In addition, landowners/managers may wish to bring contractors involved in violations into discussions with the staff leading up to a settlement as well as seeking contractor payment of monetary penalties where fair.

4. In the course of resolving violation matters with landowners through settlement agreements, the following factors will be considered in arriving at a just settlement of a violation, including the establishment of a monetary penalty in appropriate cases:
   - the extent of environmental damage resulting from the violations;
   - the extent and significance of the violations;
   - the environmental record of the landowner, including any history of prior violations;
   - the extent to which the landowner knew or should have known of the laws or standards violated;
   - the responsiveness of the landowner in connection with the violation, including
     -whether the landowner reported itself or took measures to respond to the violation without State agency request;
     -the remedial efforts of the landowner.
5. Although no two violations are identical, an effort will be made to deal similarly with violations involving similar circumstances.
6. The Commission will continue to seek additional staff so that its education and enforcement program can be carried out in a thorough and fair fashion.

Local Assistance and Public Participation

It is the Commission's policy to maximize assistance to and involvement of the communities, individuals and groups which it serves. The Commission has assisted a number of communities to prepare land use plans and zoning ordinances toward the goal of assuming local control of land use regulation. The Commission encourages local land use control for organized communities having the interest and willing to undertake this work.

The Commission will also work toward assisting applicants in understanding and complying with its processes and requirements. To this end, the Commission will seek to simplify and clarify the application process wherever possible, while assuring that it covers the environmental issues of public concern. Public participation is encouraged in all of the Commission's work through public hearings, Commission meetings and permit application review. Public access will be maintained and facilitated to all information pertaining to the Commission's actions.

Appendices

Appendix A:

Land Use Regulation Commission Policies Concerning Deer Yard Issues

Adopted April 28, 1982

Introduction:

In recent years, certain issues have arisen and been extensively debated regarding the deer yard zoning program undertaken by the Commission since its inception in 1971. The Commission itself has initiated a fresh look at these issues and its responses to them. In that regard, the Commission held a conference on deer yard zoning during the fall of 1981 at the University of Maine at Orono. The conference was well attended and allowed for a full discussion by experts of deer yard zoning programs both here in Maine and elsewhere in the U.S. and Canada. Based upon what was learned at the conference, together with experience the Commission has gained in administering and itself debating the issues behind the program over the past decade, the Commission has undertaken to state comprehensively its policies regarding the deer yard zoning issues.

While these policies reflect the Commission's best judgment following many hours of discussion and debate, they remain sensibly flexible, and no doubt will continue to be refined as new circumstances and needs require.

Background:

The Land Use Regulation statute calls for the Commission to administer a zoning program which protects deer winter shelter (deer yards) needed by the deer herd for winter protection. Based upon this statutory mandate, the Commission has established deer yard (P-FW) zones within its jurisdiction for the purpose of affording some reasonable protection for identified critical deer winter shelter habitat. Such zoning is applied based upon either landowner agreement or upon a demonstration by the Department of Inland Fisheries and Wildlife, according to specific criteria adopted by the Commission, showing the presence of utilized deer shelter conditions in an area proposed for such zoning. In areas where such zoning is in place, timber cutting restrictions are applied, usually according to a plan agreement worked out in the field between the Department wildlife biologist and the landowner. The goal here is to provide for the maintenance of some reasonable degree of winter shelter protection while still allowing for periodic timber harvesting on a sustained yield basis over the long term.

Policies:

1 *The Taking Issue:* So long as its statutory mandate to do so remains, the Commission will continue to apply deer yard zoning within its jurisdiction in a fashion which provides some reasonable degree of winter shelter protection for the deer herd.

The Commission is not in a position to respond to legal issues as to whether the deer yard zoning program, though authorized by the Legislature, nevertheless constitutes an unconstitutional taking of property without compensation. Numerous conflicting opinions by lawyers and lay people exist on these issues, but such general legal issues must be left to the courts.*

2 *Economic Burden on Small Landowner:* The Commission is cognizant of the special economic hardships which, under particular circumstances, may be caused by rigid adherence to deer yard zoning criteria and cutting prescriptions, particularly as these may be imposed upon the small landowner. Accordingly, the Commission accepts the fact that it has an important role to play in striking a reasonable balance between the needs of deer and the needs of landowners. In seeking to strike that balance in a fair way, the Commission will exercise care to prevent any landowner from being unduly burdened for the protection of the deer resource.

The Commission will be responsive to concerns expressed about undue economic hardship and will determine, on a case by case basis, whether a particular deer yard zone is necessary and reasonable in terms of its benefits to the public as against its economic or other burdens on the landowner. Thus, in cases where an unfair or unreasonable burden on a landowner is shown, the Commission will reconsider and, where appropriate, remove all or part of the deer yard zoning.

While the Commission has closely considered a variety of other approaches to responding to potential economic hardship issues caused by deer yard zoning, it believes this case-by-case weighing process is the only one which can allow for reasonable flexibility and responsiveness where needed without creating arbitrary and rigid rules for responding to economic hardship problems. In sum, the Commission believes that making the process more flexible and less rigid, rather than the opposite, is the proper response to this concern. This response, coupled with the other policies articulated below, should provide a fair deer yard program without imposing unreasonable economic hardships on landowners.

3 *The Budworm Problem:* The budworm problem in deer yards is exemplary of the conflict between the public's desire for protecting fragile resources and the landowner's legitimate interest in salvaging budworm infested timber. This conflict, as it relates to deer yards, may be particularly acute since areas which comprise the best deer shelter tend to be composed of dense, even-aged, over-mature spruce and fir, the very forest components which are most susceptible to budworm. As a general matter, it is the Commission's policy that it will not require the protection of deer cover which is composed of stands of dead or dying trees, even though these may be of some continuing benefit in protecting deer. In most such instances, the Commission will allow cutting of deer shelter areas. However, in cases where dead and dying trees are a relatively small component of a stand which otherwise is reasonably healthy, the Commission may decide to restrict harvesting so as to avoid destruction of the value of the residual stand as deer shelter.

4 *Administrative Burdens in Managing Deer Yards:* There are isolated instances where landowners have complained of significant costs and delays in awaiting approvals for cutting in deer yards. The Commission has recently streamlined its process here, and basically relies upon the wildlife biologists of the Department of Inland Fisheries and Wildlife to work out an acceptable cutting agreement in the field with the landowner. The Commission and its staff involve themselves in resolving disputes between these parties. In this vein, where landowners are experiencing administrative problems or delays with this system, the Commission or its staff should be so informed immediately so that efforts may be made promptly to facilitate the process.

5 *Interim Zoning:* As indicated above, a number of deer yards remain under interim zoning due to the lack of opportunity of the Department of Inland Fisheries and Wildlife to obtain needed survey data in order to meet the criteria for permanent zoning. This lack of opportunity is due to the inadequate winter conditions for determining deer yard use in the winters of 1979-80 and 1980-81. However, this past winter has provided excellent conditions for completing these surveys, which should be available for Commission action later this spring. The Commission is

committed, as a matter of top priority, to the elimination of all remaining interim zones at the earliest possible time.

6 *Deer Yard Zoning Criteria:* The criteria currently used by LURC in identifying deer yards have been the subject of much discussion but little recent criticism. The only significant criticism heard recently has been that, in focusing on protection of currently used deer yards, the Commission has not provided for the identification and protection of deer yard needs 10 to 20 years into the future. However, extending the program to cover "prospective" deer yards would be both speculative and impractical. Moreover, experts indicate that deer do tend to yard up in the same areas year after year. Accordingly, the Commission's program will remain focused on currently used and needed deer yards, while recognizing that, if circumstances change and deer alter their yarding habits over time, the Commission should remain flexible in altering deer yard zones accordingly.

7 *Deer Yard Cutting Presciption Criteria:* The cutting prescriptions for deer yards, as provided under the guidelines of the Department of Inland Fisheries and Wildlife, generally appear to allow for a reasonable degree of cutting on a sustained yield basis balanced with a reasonable degree of long term deer yard protection. However, some public confusion appears to exist as to the specific guidelines and processes used, and the Commission requests that the Department of Inland Fisheries and Wildlife make available a comprehensive written set of guidelines, policies and administrative procedures (including priorities and time frames) which they will use in arriving at cutting prescriptions.

8 *Future Study Needs:* The Commission wishes to encourage studies by the Department of Inland Fisheries and Wildlife and others on the effects on the deer herd of various deer yard management techniques, including alternative cutting prescriptions. The Commission recognizes that such studies will necessarily take a number of years and require a long term commitment. As such studies get underway and yield results, the Commission wishes to be informed of their progress.

The Commission also encourages and wishes to support additional studies by the Department of Inland Fisheries and Wildlife to identify other wildlife values of deer yards as well as other significant wildlife and fishery habitats appropriate for P-FW zoning protection. The Commission suggests that such new studies might be initiated after the Department has completed the surveys needed for replacing all remaining interim zoned deer yards.

* Subsequent to the endorsement of this policy, the Maine Supreme Judicial Court, in *Seven Islands Land Company v. Maine Land Use Regulation Commission,* held that, in general, deer yard zoning is constitutional and that the Commission's application of zoning to protect the deer yard in that case was constitutional.

Appendix B:

Applicable State and Federal Land Use Laws

The Maine Land Use Regulation Commission, under its statute, is responsible for comprehensive planning and land use regulation in the unorganized areas of Maine. There are, however, a number of state and federal agencies which apply other environmental controls, and many of these laws are closely coordinated with the administration of the Commission's laws. This section briefly describes these other important state and federal environmental and land use laws.

Maine Laws

Water Resources

The Department of Environmental Protection (DEP) has primary responsibility for the State's water quality laws. This authority is exercised in a number of ways:

1 The Legislature classified each river and lake based on the level of water quality it desires to maintain in these. The Board of Environmental Protection (BEP) issues waste discharge licenses for all discharges into surface waters, insuring that the discharge does not result in water quality degradation to such a degree that the water body's assigned classification might be lowered.

2 Any draining, filling, dredging, or construction of permanent structures in coastal wetlands or great ponds requires a permit under the Alterations of Coastal Wetlands Law and the Great Ponds Act. Permits are granted for projects that do not unreasonably harm fish and wildlife habitat, cause soil erosion, interfere with navigation and recreation, lower water quality, on interfere with the natural flow of waters.

3 The Site Location of Development Law requires that a permit be attained for any development that may substantially affect the environment. It is applied in the jurisdiction to regulate developments of 3 acres or more, including subdivisions with 5 or more lots covering at least 20 acres, haul road construction in management districts, or any activity that consumes, generates, or handles hazardous wastes or materials, oil, or more than one ton/year of road salts. Its scope extends beyond water quality.

4 The Solid Waste Management Law operates in concert with the Site Location Law in regulating solid waste disposal.

The Department of Inland Fisheries and Wildlife (DIF&W) issues permits under the Alteration of Rivers, Streams, and Brooks Act for dredging, filling, building in, or altering streams or their banks. However, this law does not apply to public works projects that alter less than 300 feet of shoreline per mile or private crossings or dams that alter 100 feet per mile.

The Division of Health Engineering, Department of Human Services (DHS) issues permits for public water supply systems. This agency also administers the State Plumbing Code (Subsurface Wastewater Disposal Regulations) which regulates the disposal of wastewater.

While many of the water resource laws pertain in part to hydropower development, some laws deal exclusively with hydropower. Owners and operators of dams must register them with the Department of Agriculture, Food, and Rural Resources. That Department inspects dams for safety. The Neglected Dams Act authorizes the Commissioner to order the maintenance of a specific water level at damsites that no longer have beneficial economic uses. The Abandoned Dams Act authorizes the Commissioner to award ownership of an abandoned dam.

The Small Hydroelectric Generating Facilities Law requires a DEP permit for hydropower proejcts at existing dams which are redeveloped with less than 1.5 megawatts. The projects qualifying under this act are exempt from certain other regulatory permitting laws.

Most of these laws administerd by other State agencies are closely coordinated with the administration of the LURC law. Thus, in LURC jurisdiction, the rules of the State Plumbing Code are used by the Commission in determining the adequacy of proposed sewage disposal systems. Under the so-called one-stop law, applicants with proposals in LURC jurisdiction requiring permits under the Site Location Law, Great Ponds Act, Alteration of Coastal Wetlands Law, and Stream Alteration Law need file applications only with LURC, which sees to the securing of these other permits and is responsible for coordinating agency responses.

Air Resources

DEP's Protection and Improvement of Air Law authorizes the Board of Environmental Protection to establish ambient air quality standards in the state's five air quality regions. The Commission's jurisdiction falls partially into three of these regions. The Board regulates and limits the amounts and types of air contaminants which may exist in the ambient air of a given region and issues licenses for air discharges.

Soil and Mineral Resources

The Department of Agriculture, Food and Rural Resources, Soil and Water Conservation Commission is an educational and advisory body dealing with soil and water conservation. In addition, it is a policy making body for the state's sixteen soil and water conservation districts. These districts have been designated to promote soil conservation practices on agricultural lands.

The Department of Conservation, Maine Geological Survey grants permits for prospecting and mining on State-owned lands.

The Site Location Law requires that major proposed developments be built on soil types which are suitable to the nature of the undertaking. The law also has provisions for granting mining permits and regulating mining operations. This law is administered with the LURC law under the so-called one stop permit process.

Forest Resources

The Department of Conservation, Bureau of Public Lands manages the roughly 400,000 acres of public lots in the Commission's jurisdiction. These are managed for multiple use purposes, including principally forestry and non-intensive recreation.

The Department of Agriculture, Food and Rural Resources, Board of Pesticide Control regulates pesticide use throughout the state. This board has the authority to determine the safety of pesticides and herbicides and set guidelines for commercial regulators. The Commission has determined not to regulate the application of pesticides in its jurisdiction at this time provided that all laws and rules of the Board of Pesticide Control are adhered to.

Wildlife Resources

Since a proposed land use may affect fisheries and wildlife habitat and management, the Department of Inland Fisheries and Wildlife serves as a valuable review agency for many of the Commission's permit applications and also assists the Commission's work in field investigation and monitoring. In addition, it assists the Commission in the identification and protection of zoned deer wintering areas and remote fishing ponds, and works closely with landowners and land managers to develop cutting plans in deer yards.

The Department of Inland Fisheries and Wildlife has the authority to require the construction of fish ladders in dams above the head of the tide and to prescribe the time during which a fishway must be kept open. The same responsibility is granted to the Department of Marine Resources with regard to fishways in dams on tidewaters.

Taxation

Property taxation can be an effective tool toward encouraging desirable land uses. Under the Tree Growth Tax and Farm and Open Space Laws, taxes are assessed according to current use rather than highest and best use. These laws, through tax incentives and penalties levied if land is withdrawn from either classification, discourage conversion of land to more intensive uses. Approximately 90% of the land in the jurisdiction is taxed under the Tree Growth Law and a few thousand acres are assessed under the Farm and Open Space Law.

The Mining Excise Tax, enacted in 1982, is assessed on all land and facilities associated with a mining operation. A tax is levied either on the value of the mining facilities and equipment or on the net income derived from the minerals removed, whichever is higher. Tax revenues are used to support the State General Fund to pay for the increased services incurred by local governments affected by the mining operations, and to go into a trust fund for park development, important wildlife habitat acquisition, and water quality restoration projects.

Federal Laws

Federal environmental laws also have an important impact on land use planning and regulation. The federal laws that most directly affect activities occurring within the jurisdiction are briefly summarized here.

Federal Water Pollution Control Act

The Federal Water Pollution Control Act of 1972, as amended by the Clean Water Act of 1977, authorizes the Environmental Protection Agency (EPA) to restore and maintain the chemical, physical, and biological integrity of the nation's water by setting specific goals including:

- achieving, by 1983, water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides recreation opportunties in and on the water;
- prohibiting the discharge of toxic pollutants in toxic amounts;
- providing federal financial assistance to construct publicly owned waste water treatment facilities; and
- developing and implementing wastewater treatment management plans in each state.

The Act is aimed at achieving these goals chiefly by requiring state agencies to identify and control certain sources of water pollution and by requiring permits for discharges. The sections of the Act which have the greatest impact on the Commission's jurisdiction are:

Section 208, requiring that programs be established to identify and control non-point sources of pollution. In LURC jurisdiction, this effort has focused on identifying agricultural and silvicultural non-point sources of pollution and adopting land use standards and guidelines to control the pollution from these sources.

Section 303 (e), requiring each state to establish, maintain, and submit to EPA a continuing planning process document that describes the procedures that state will use in developing and updating water quality management plans.

Section 402, requiring that a permit for discharge of any pollutant into state waters be obtained from EPA. A permit can be granted only if the discharge adheres to applicable requirements of the Clean Water Act.

Federal Clean Air Act

The Clean Air Act governs efforts for protecting and enhancing the quality of the nation's air. The act establishes ambient air quality standards for specific air pollutants and requires that strategies be developed to maintain standards. The law is also intended to protect air resources from significant deterioration by establishing air quality regions and allowing that air quality not be degraded beyond specified levels in each region.

Coastal Zone Management Program

The Coastal Zone Management Act of 1972 authorizes states to develop coastal management programs that blend economic development and conservation concerns for coastal waters, shorelands, and those inland areas whose use has direct and significant impact on coastal waters. In 1978, the Maine Coastal Program was approved by the federal Office of Coastal Zone Management. Approval entitled Maine to receive more than funding to implement its program. Funds are used to provide financial and technical assistance to coastal communities for projects related to the management of coastal resources, as well as a forum for addressing statewide, coastal issues. In addition, by approving Maine's Coastal Program, the federal government pledged to operate all its programs in accordance with state coastal protection laws.

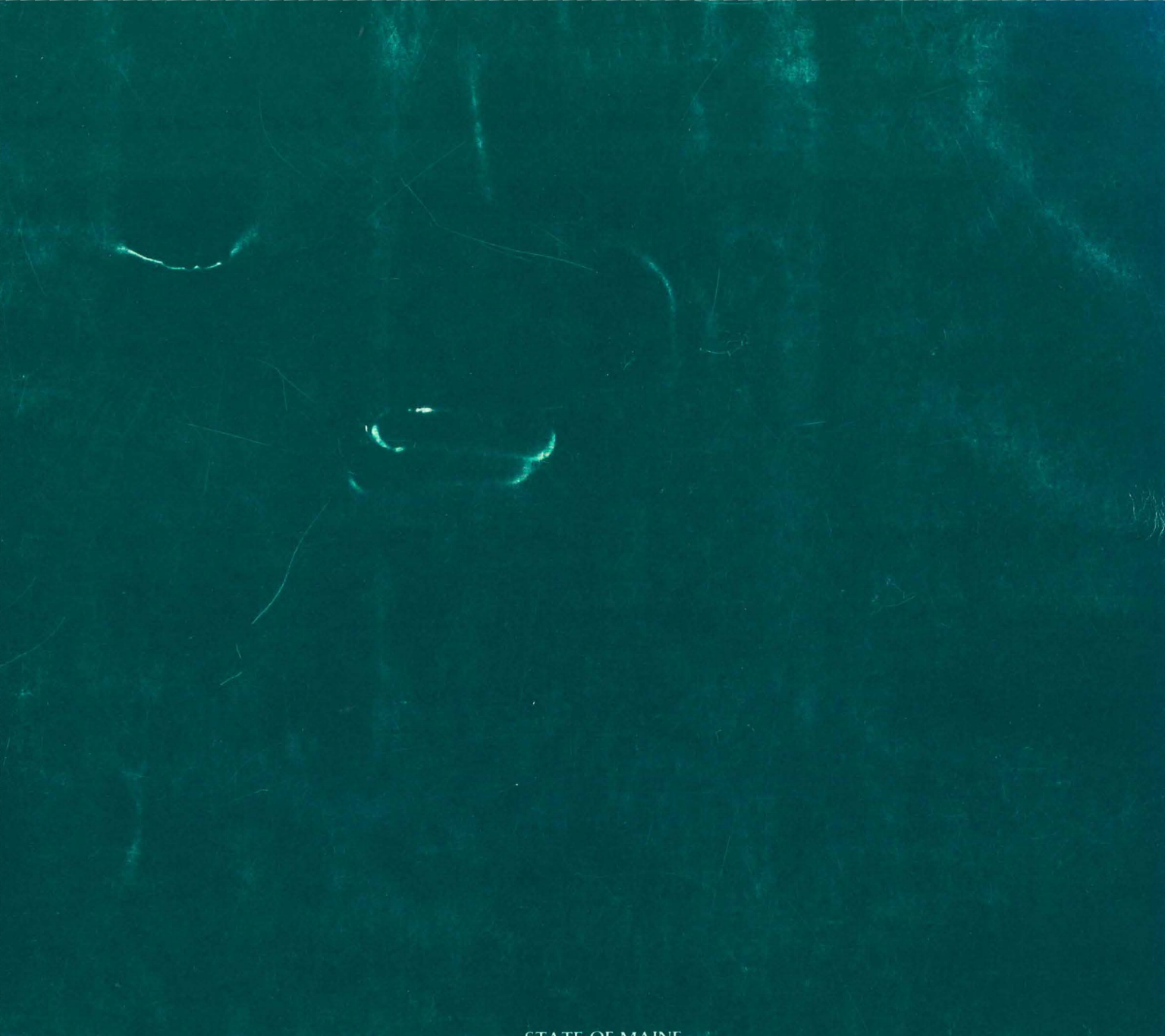
Federal Energy Regulatory Commission

The Federal Energy Regulatory Commission (FERC) is responsible for licensing hydroelectric facilities and projects. In addition to licensing, FERC issues preliminary permits which, although not a prerequisite to licensing, allow the applicant exclusive rights, for up to three years, to explore the feasibility of developing a site prior to applying for a license, and to pursue the license application.

FERC serves as the clearinghouse to coordinate all federal and state agencies' comments on hydropower projects.

Federal Insecticide, Fungicide, and Rodenticide Act

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) enacted by Congress in 1947 and amended in 1972 places most pesticide enforcement authority in the hands of the U.S. Environmental Protection Agency (EPA). The EPA has the authority to require training and licensing of pesticide applicators and to regulate the use and labelling of pesticides. In Maine, the Board of Pesticide Control enforces the FIFRA law.



STATE OF MAINE

DEPARTMENT OF CONSERVATION

AUGUSTA, MAINE 04333