
PROVINCE OF BRITISH COLUMBIA
ENVIRONMENT AND LAND USE COMMITTEE

Report of the Secretariat

YEAR ENDED DECEMBER 31, 1975



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VICTORIA, B.C., March 1976

Colonel the Honourable WALTER S. OWEN, Q.C., LL.D.,
Lieutenant-Governor of British Columbia.

MAY IT PLEASE YOUR HONOUR:

Herewith I respectfully submit the Annual Report of the Secretariat of the Environment and Land Use Committee for 1975.

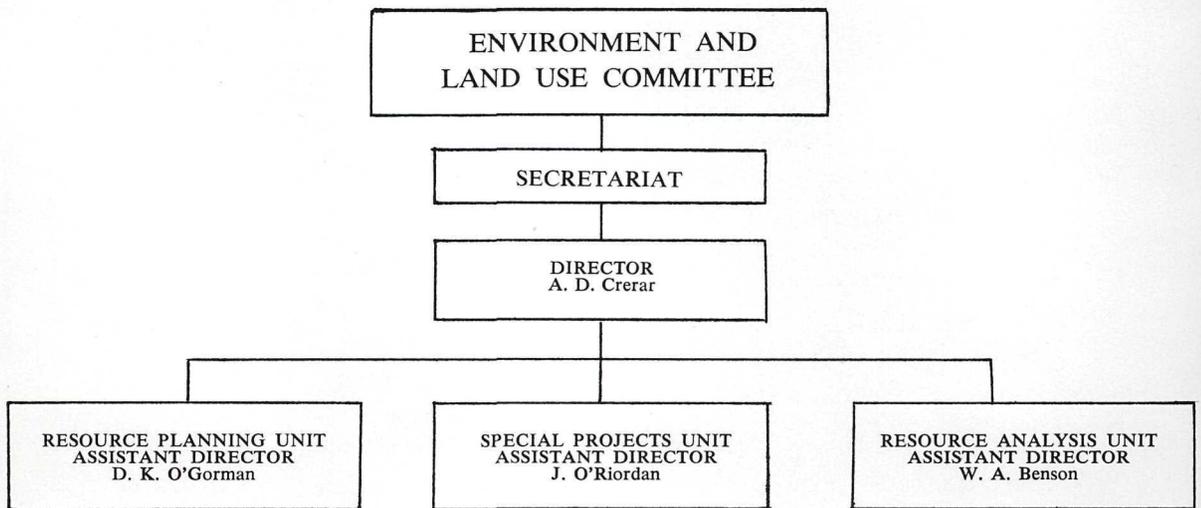
JAMES A. NIELSEN
Chairman
Environment and Land Use Committee

*The Honourable James A. Nielsen, Chairman,
Environment and Land Use Committee,
Victoria, B.C.*

SIR: This is the Annual Report of the Environment and Land Use Committee Secretariat for 1975.

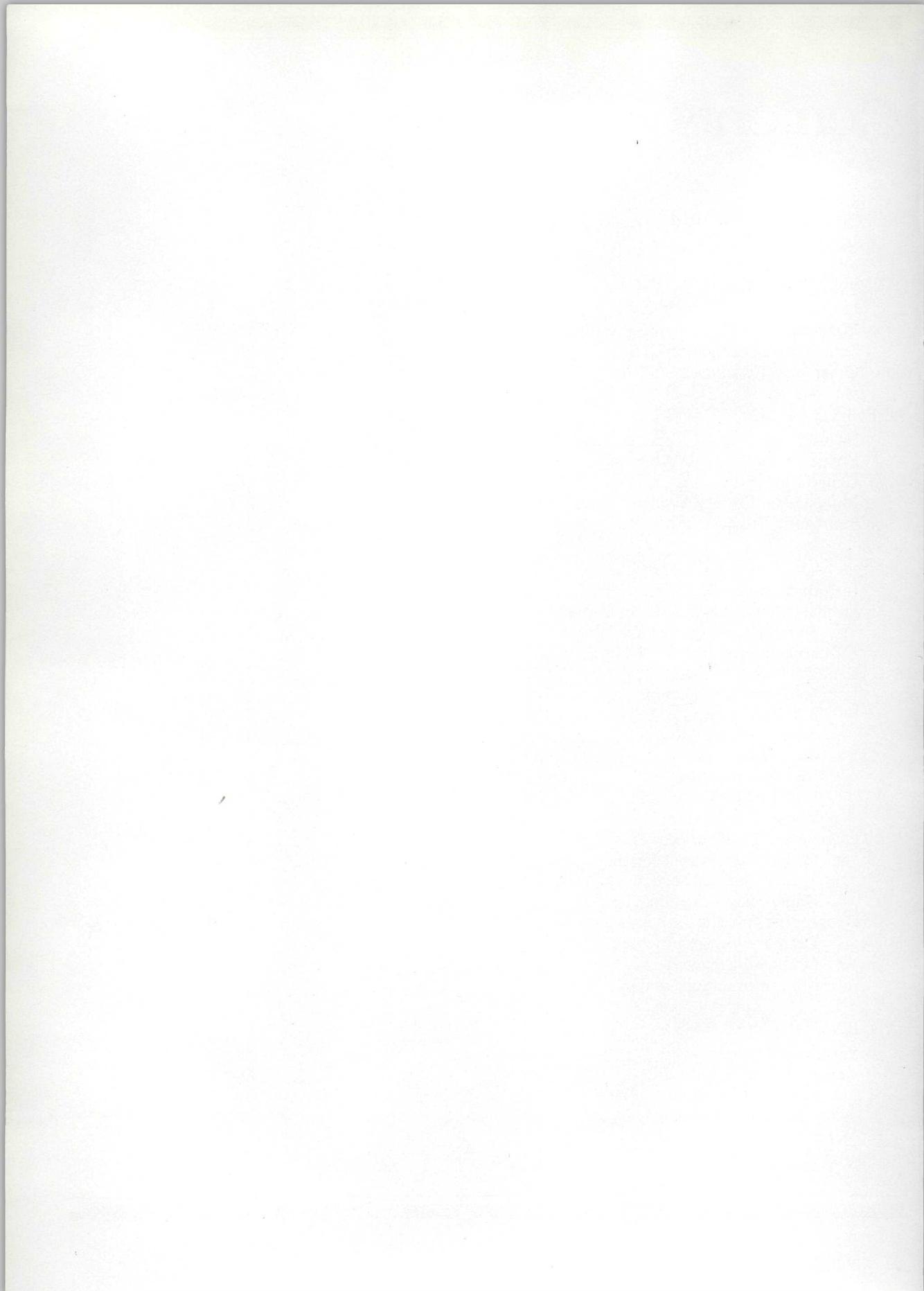
A. D. CRERAR
Director
Environment and Land Use Committee Secretariat

Organization



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Report of the Director

Introduction

(1) Functions

The Environment and Land Use Committee Secretariat serves as the staff arm of the Environment and Land Use Committee of Cabinet. Under the *Environment and Land Use Act* the Cabinet Committee is given power to

- “. . . establish and recommend programs designed to foster increased public concern and awareness of the environment . . .”
- “. . . ensure that all the aspects of preservation and maintenance of the natural environment are fully considered in the administration of land use and resource development . . .”
- “. . . make recommendations to the Lieutenant Governor in Council . . .”
- “. . . study any matter pertaining to the environment, or land use . . .”
- “. . . prepare reports . . .”
- “. . . hold public inquiries . . .”
- “. . . appoint technical committees . . .”

Orders made by the Lieutenant-Governor in Council, upon recommendation by the Committee, may be made under this Act “. . . notwithstanding any other Act or regulation. . . .”

In the exercise of such powers the Committee requires well-considered advice from its contributing departments and typically this is obtained through interdepartmental studies using the Secretariat as the vehicle of co-ordination. The Committee has a major role in determining policy where the mandates of individual ministries may be leading in conflicting directions. The studies undertaken on the direction of the Committee through the auspices of the Secretariat are intended to help clarify the alternatives and the consequences of the policy choices available to the Cabinet Committee.

The focus of studies undertaken by the Secretariat relates to problems of resource development and use which now number among the major policy questions facing governments everywhere. These development decisions affect the economic base of whole communities and regions as well as their natural and social environments. Such questions include hydro power, coal and major forest developments, land use conflicts on the coastal zone, conservation proposals, and a host of others. As these issues precipitate conflicts of interest between resource-users, departments, and departmental responsibilities represented by the Ministers, reconciliation must be found. Creation of the Environment and Land Use Committee and its Secretariat was an approach to achieving such reconciliation.

In dealing with resource allocation conflicts, the concept of the Secretariat has been to bring together teams comprising individuals from various resource departments who speak for the different interests and attempt to clarify the conflicts, understand the impacts of proposed developments, identify approaches for mitigation, quantify and assess these alternatives, and, finally, present preferred solutions to the Committee for final decision. Heavy emphasis is given to identification of opportunities for integrated resource management, though in the final analysis, political judgment and decision must prevail.

In co-ordinating such investigations we emphasize that the Secretariat does not intrude on the many effectively operating bilateral arrangements that presently exist between departments. As a rule, most matters can be settled satisfactorily by the departments dealing directly with each other. It is only in those questions where problems that cannot be handled simply and directly, where frustration levels are high, where the problem is complex and has numerous dimensions, where many departmental interests are affected, or

where there is no precedent to follow, that the Secretariat becomes involved and then only on the direction of the Environment and Land Use Committee. This ensures that the Ministers have collectively identified the problem and are satisfied that its resolution is beyond the scope of a single department or normal bilateral arrangements.

(2) Organization

The Environment and Land Use Committee Secretariat is organized into three units, each with an Assistant Director at the head. Two of the units—Resource Planning Unit and Special Projects Unit—have a small multi-disciplinary professional staff which co-ordinate interagency investigations into resource use conflicts. Although the general objectives of the two units are similar, their points of focus are different. The Special Projects Unit concentrates on developing techniques to resolve classes of resource use conflict such as benefit-cost analysis and environmental impact assessments, while the Resource Planning Unit applies these techniques on a broad regional scale to evaluate and propose integrated resource use plans.

The third unit of the Secretariat is the Resource Analysis Unit, which provides the basic building blocks for resource planning. Its mission is the compilation of an inventory of resources, including soils, landforms, climate, and vegetation. From this biophysical data base, it is possible to develop a wide range of interpretations, including resource productivity and suitability of lands to support urban use, transportation, and other developments.

The role of the Resource Analysis Unit differs quite distinctly from that of other departments involved in resource inventory. The unit develops information on the *potential capability* of the land to support a wide range of resources, while

other resource departments undertake inventories of existing resources and current use patterns.

Because the resource inventory data have widespread utility in resource planning, it has been advantageous to house this expertise in close contact with the planning units of the Secretariat. Through mutual interaction, both the data-gatherers and the data-users have become more aware of each other's needs and capabilities.

Information developed by the Resource Analysis Unit is also directly used by line agencies, in their planning functions, notably the preparation of "folio plans" prepared by the B.C. Forest Service to guide forest harvest patterns in each major drainage in recognition of the needs and sensitivities of other departments.

In summary, the three units within the Secretariat now operate interdependently to improve and apply the techniques of integrated resource planning in the Province. The Resource Analysis Unit provides the basic building blocks—biophysical data and resource capability interpretations. The Special Projects Unit has begun to develop new analytical techniques which evaluate various combinations of resource use, where conflicts arise to determine the best allocation that maximizes economic and social returns to the Province. The Resource Planning Unit in turn applies these analytical techniques in resolving practical problems and in working toward broad regional resource allocation plans.

ROLES OF THE SECRETARIAT

Perhaps the best way to describe the diverse roles of the Secretariat is to illustrate some of these roles through specific examples. Other examples are contained in the unit descriptions which follow this section.

(i) *Short-range investigations*—Complex resource problems involving the several resource departments are perhaps the most frequent type of projects undertaken by the two planning units. These problems are referred to the Secretariat by the Committee for resolution within four to eight months. A good example was the conflict over park expansion in the Cathedral Lakes area situated in the southern Interior of British Columbia.

Controversy over best resource use in the *Cathedral Lakes Park* region has existed for some time. The ELUC instructed the Secretariat to evaluate the implications and impact of a Parks Branch proposal to expand the park. This involved assessment of various resource potentials and demands, including forest capabilities, mineral claims, grazing, hunting, and possible future water impoundments. These diverse demands were taken into account in arriving at the final decision to expand the park. Park boundaries exclude existing mining claims, but any other resource use will be carefully regulated, such as use of summer grazing range under existing permits and controlled hunting. General provisions for potential future water impoundments have been included in the plan.

(ii) *Longer-range investigations*—Occasionally, the Secretariat is asked to co-ordinate more complex resource allocation projects which require over a year to complete as they often include field studies. Examples include the Williston Resource Study, Terrace-Hazelton Forest Resource Study, and the B.C. Ferry Study which is briefly described below.

The ELUC asked the Secretariat to co-ordinate a study of future options for ferry transportation between the Lower Mainland and Vancouver Island. Recognizing that the future provision of ferry services will have a direct bearing on land use and environmental resources in these areas, the study has involved representatives from B.C. Ferries, various Provincial and Federal agencies, municipal governments, and consultants. Projections for passenger and vehicle use on the ferries have been prepared to the year 1990 and the economic, environmental, and social implications of various options for accommodating such demands have been evaluated. These options include facility expansion, development of new terminals, controlling peak demands through fare adjustment, reservation system, and improved public transportation.

(iii) *Development of Resource Management Techniques*—Integrated resource management must be made operational through administrative systems. In British Columbia it is common to have the same prime lands being sought by a number of users. Where the potential for conflict is high, rational means of facilitating integration or achieving trade-offs must be developed.

The Secretariat identified the need to update and expand benefit-cost techniques to assist political decision-makers in determining the optimum allocation of resources as well as to provide a systematic mechanism for comparing resource development alternatives. In the past, this technique has been used sparingly without any consistent criteria, but the Secretariat has convened a small working group of resource economists from all major resource agencies to establish guidelines that will be used by all departments. The objective is to produce a working manual which will have widespread use within Government and its Crown corporations to standardize economic analysis of resource decisions. Although the manual is not yet complete, the guide-

lines that are accepted are already being applied in hydro power evaluations, agricultural drainage developments, and the value of recreational and commercial fisheries. Participation by economists from B.C. Hydro, Water Resources, Energy Commission, Agriculture, and Forest Service helps spread the work load and ensures that the guidelines will be understood by the various participating agencies.

These economic principles have also been incorporated into the resource folio planning developed by the Forest Service to improve integrated resource planning techniques. Although the resource folios developed by the Forest Service and the Resource Analysis Unit of the Secretariat greatly improve the analysis of forest harvest impacts on the environment, they do not include economic and social data which are often necessary to allocate resources in the best interests of the public. The Springbrook Project in the southeast Kootenays was designed to upgrade the folio data by introducing socio-economic evaluations of various combinations of resource use in the benchlands surrounding the Kootenay River. These lands are valuable for forestry, wildlife, and cattle grazing, but, because of conflicts in resource use, the maximum productivity of these three resources cannot be achieved simultaneously.

Three resource use alternatives were analysed—forest use, rangeland use, and combination of rangeland and forest management through selective logging. The study analysed the levels of productivity in each resource use, singly and in combination, and placed economic values on these levels of production to determine total net benefits. This same technique can be used in other areas of the Province to establish, for example, the level of increased costs of logging operations to protect the environment that can be justified through reduced losses in fish and wildlife production and recreational use.

(iv) *Technical co-ordination*—One of the more important roles of the Secretariat is to act as a single point of contact in Government for co-ordination of agency involvement in complex technical issues such as resource inventory techniques and environmental impact assessments of major projects such as power generation, transmission-lines, and coal developments. As these major developments can involve a wide range of Government agencies interested in the economic, environmental, and social impacts, it is difficult and time-consuming for private industry or Crown corporations to contact each agency at the right time in the impact assessment process.

The Secretariat has developed a comprehensive set of procedures for undertaking impact assessments of major developments and has applied these to proposed B.C. Hydro developments, major power transmission-lines, new highways, and coal mine developments. These procedures follow a four-stage assessment starting with project justification, followed by broad evaluation of a number of alternative development sites; detailed evaluation of a selected site and finally impact mitigation and compensation during and following project implementation. The Secretariat, with the co-operation of several resource agencies, has developed a draft set of guidelines for hydro-power developments outlining the necessary data and information required at each stage in the assessment process. The aim of these guidelines is to avoid excessive and often conflicting requirements specified by various departments, yet ensure that all departmental interests are taken into account during the assessment process.

Terms of reference for proposed impact studies to be undertaken by private consultants hired by private industry and Crown corporations are funnelled through the Secretariat to the various agencies for comment. Similarly, draft reports are reviewed by interested departments and comments integrated by Secretariat staff to avoid

duplication or conflict and returned to the proponent for further analysis. Technical advice, such as the application of benefit-cost guidelines, is also available to the proponent through the Secretariat.

During 1975 the Secretariat encouraged B.C. Hydro to apply these impact assessment procedures to proposed developments at Revelstoke, Peace River, Upper Fraser, and Kootenay Diversion. During the assessment process, the Secretariat can provide detailed progress reports to ELUC to advise the Committee as early as possible on major conflicts and possible alternatives for their resolution.

In response to the rapidly growing interest in coal as an energy source draft, *Guidelines for Coal Development* have also been prepared by the Secretariat in association with other resource departments. They also represent a good example in which the three units of the Secretariat pooled their skills in data analysis, impact assessment techniques, and regional planning approaches to develop a unique document. These technical guidelines specify a similar four-stage project assessment process as developed for hydro-power projects proceeding from a general prospectus to preliminary and detailed project assessments and concluding with a Ministerial approval stage. The objectives of the *Guidelines* are to clarify the requirements of Government, and to direct the efforts of the companies and their consultants in addressing and resolving questions related to natural environmental and socio-economic impacts. To facilitate this interagency project review process, a Coal Guidelines Steering Committee consisting of representatives from the ELUC Secretariat, the Department of Mines and Petroleum Resources, and the Department of Economic Development has been established.

These *Guidelines* can be used to assess individual mining proposals, as well as a number of developments in one region, when there can be a cumula-

tive regional impact that requires broad Governmental assessment. Regional impact assessments associated with coal developments are now under way for the southeast Kootenays and recently for the northeast region south of Chetwynd and for the Hat Creek thermal development.

The Secretariat also convenes various technical committees such as the Data Services Committee, which has co-ordinated agencies using computer data and the Land Resources Steering Committee consisting of Federal and Provincial scientists as well as the relevant university community. This latter committee is working toward more useful and integrated resource inventories throughout the Province. The objectives of the committee are to co-ordinate the collection of soil and land resource information, to investigate data needs of resource managers, and to promote research congruent with these needs as well as encourage integrated research programs of co-operating agencies.

(v) *Technical liaison with industry*—The Secretariat does not only liaise with other Government departments on resource planning, it can also work directly with the industrial sector. A good example of this role is the development of the Babine Forest Products Sawmill at Burns Lake which benefited industry, the community, and the native Indians.

The Burns Lake native people were given an 8-percent share in the mill through the Burns Lake Native Development Corporation (BLNDC). This share was funded through a Provincial loan, which would be forgiven if the native Indians used the opportunity to create new employment opportunities for themselves. To assist the Indians in this task, Provincial and Federal social assistance programs were co-ordinated to provide a vehicle for native input to education and job training, child care, housing, and alcohol rehabilitation programs. In addition, a logging school was established on Ootsa Lake and in the spring

of 1975 some 50 natives graduated, ready to work for the mill. A training program for mill workers was also established and by start-up in July 1975, 90 percent of the total employment of 200 came from the local labour force. Over 40 percent were native people, thus significantly reducing the local unemployment population of 300 (400 prior to mill commencement). By the end of the year, the mill was operating smoothly and was estimated to lie in the top 10 percent of recently developed sawmills in terms of attaining production targets.

The opening of the mill had a variety of "spin-off" effects on the local white and native population. Municipal services had to be improved due to increased housing starts, and a community tree-farm licence was planned. Under the Burns Lake Native Development Corporation, local Indian bands became involved in logging, trucking, agricultural development, and commercial salmon fishing.

The Secretariat under the direction of ELUC was responsible for bringing together the many services of the Provincial Government, the municipality, the native people, and local residents to create a wide range of new opportunities for the area. For the company there has been a smooth start-up, high production, and productivity. For the native peoples an opportunity to become part-owners of a major sawmill and to get the education and training required to hold steady jobs. For the local residents the same opportunities for training and steady jobs and for local merchants and businessmen, increased opportunities provided by increased incomes. For the village, the opportunity to improve the services and to transform a stagnating community into a dynamic one. For the Provincial Government, its timber resources are being put to work on behalf of the people in a socially responsible way, which incidentally will generate revenues through stumpage and taxes that did not previously exist. For

Human Resources it means a reduction in welfare payments and case loads and the avoidance of social tensions that accompany rapid influxes of outsiders.

Industrial development need not be a win-lose confrontation. It is possible to use industrial development for the benefit of all with co-ordinated application of a wide range of Federal and Provincial programs.

(vi) *Studies involving community consultation*—Questions of resource development and conservation are generating increasing public interest which has led to greater public consultation during problem resolution. The Secretariat has been involved in a number of projects where public consultation has taken place, ranging from small meetings to public workshops and hearings.

At the local level, for example, the Secretariat was directed to work with citizens in the Smithers area, after opposing views of two citizen groups emerged on the most suitable use of the southern Babine Mountains. The Secretariat brought snow-mobilers and conservation interests together to meet with officials of Provincial agencies and to inspect contentious sites. The result is agreement on a "winter recreation system" for the area. This assignment is detailed more fully in the section describing the activities of the Resource Planning Unit.

On a regional scale, the Secretariat and staff of other departments participated in northline community meetings and workshops. These were initiated by the ELUC to give residents in north-western communities an opportunity to hear and discuss proposals centering on forest development and related rail and port construction under a proposed Federal-Provincial agreement. The response varied from community to community but it permitted decision-makers to understand the differing needs and attitudes of these communities.

After the initial round of public meetings in northwestern British Columbia, it was clear that residents wanted more in-depth dialogue on resource development and its effects. Community workshops were then held in nine centres with a range of groups, including municipal councils, school boards, labour unions, teachers' associations, and environmental groups. The Secretariat also organized a number of public hearings held by Environment and Land Use Committee. These included hearings on land use in Victoria's Inner Harbour, agricultural land reserves in Richmond, and forest development in the Tsitika-Schoen drainage in northern Vancouver Island.

(vii) *Independent technical advice*—In several instances, the ELUC, when faced with complex policy questions, has received divergent technical advice from different sources making decision-making difficult especially if the financial consequences of error are high. The Secretariat, which has professional expertise in a wide range of disciplines—economics, biology, forestry, social and community development issues, land use planning, etc.—has been asked to provide an independent assessment in such instances.

One example of such analysis was an examination of future demands for electrical energy in the Province over the next 15 years. B.C. Hydro prepared forecasts ranging between 7 and 10 percent annual growth with a "best estimate" of 8.6 percent growth. The B.C. Energy Commission produced a lower range of forecasts, ranging between 5 and 8 percent, with a "best estimate" of 7 percent growth. Both projections used different methods for projecting population and economic development in the Province, and these were compared by Secretariat staff economists with input from the Department of Economic Development. In the space of approximately six weeks, all the data were carefully examined and a comprehensive critique of both reports summarized for ELUC. The analysis identified weak-

nesses in the techniques of economic projections and initiated discussions between Economic Development, B.C. Hydro, and the Energy Commission to standardize procedures in future forecasts.

These examples provide a framework to illustrate the diversity of roles played by the Secretariat while undertaking its unique function within Government. The following sections of this report fill in this framework with descriptions of other projects undertaken by the three units.



DIRECTOR
A.D. Crerar



Resource Planning Unit

Introduction

The main focus of the Resource Planning Unit is on the co-ordination and conduct of integrated resource development management studies on a regional basis assigned by ELUC. More specifically the roles performed include

- Co-ordinating integrated regional studies involving evaluation of resource potentials, social requirements, and economic factors. The object of such analyses is to ensure that development strives for a balance which is environmentally sound, economically feasible, and publicly acceptable.
- Conducting planning evaluations of specific resource-management issues and formulating action-oriented alternatives for ELUC consideration and decision.

These roles require considerable interdepartmental and interdisciplinary consultation, de-

signed typically on a team basis, to sharpen understanding, clarify options, and find avenues of resolution. Because divergent views on optimum resource allocation or management often exist, considerable emphasis is placed on evaluation of alternatives by interagency study teams. This approach, while perhaps slower than unilateral decision-making, generates a more comprehensive assessment of the issues.

As noted in the Director's report the roles of the Resource Planning Unit also require it to co-ordinate, on behalf of ELUC, various forums for public consultation.

An appreciation of the scope of the work of the unit can be obtained from the following résumé of its diverse assignments in 1975.

Long-term Regional Planning Studies

Regional studies entail long-term investigations into the particular development problems and prospects of particular areas.

(i) *Terrace-Hazelton Region*—The key investigation in regional resource planning initiated by ELUC in 1975 was the Terrace-Hazelton Regional Forest Resources Study. The study was designed to develop a comprehensive appreciation of the regional economy, its resource potentials, and multi-resource management requirements in a regional context. Initiated in response to contradictory assessments of the region's sustained timber supply, the study was geared to improving the information necessary for future decision-making.

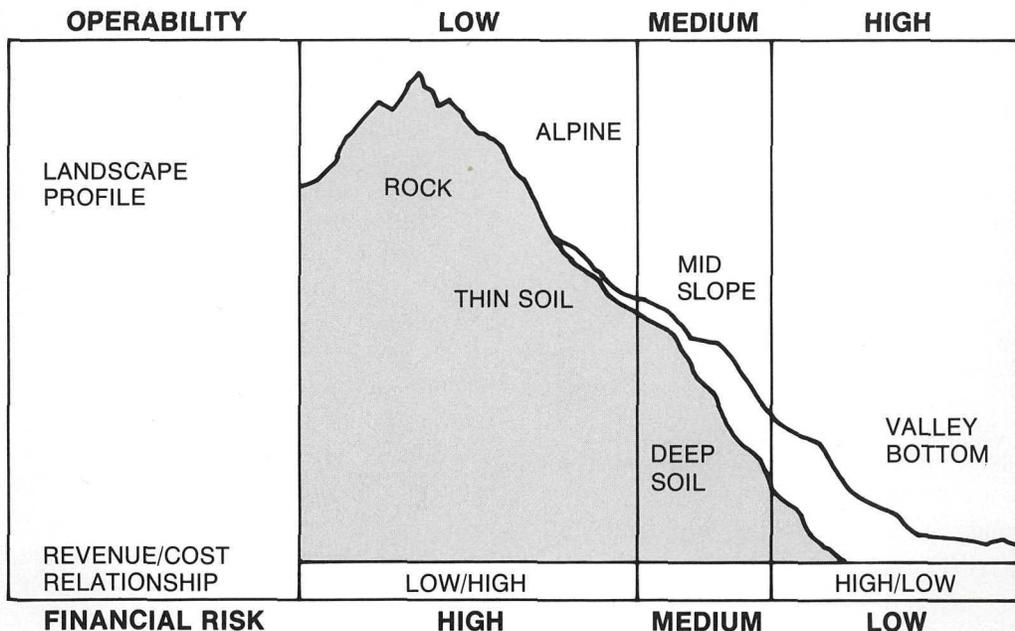
The study summarized the resource potentials in the Nass and Skeena basins (excluding the Bulkley and Babine drainages), an area of 12 million acres. Known information was assembled and reconnaissance inventories to fill obvious data gaps were undertaken. These resource assessments were achieved through the co-operation of the Forest Service, Fish and Wildlife Branch, Mines Department, Parks Branch, Lands Service, Water Resources Service, Federal Fisheries Service, Highways Department, and Provincial Secretary's Department as well as the Inventory Unit of the Resource Analysis Unit.

The renewable resource base was assessed by using the biophysical concept in which the inher-

ent capabilities of the region's resources are evaluated based on terrain analysis, soils, climate, and vegetation. These data were integrated into a functional classification known as a "Land Use Planning Framework." To facilitate analysis, the study area was divided into 15 resource management areas according to subdrainages of the Skeena and Nass Valleys. This approach assisted understanding of resource interactions, the relative and varying significance of individual resources throughout the study area, and in drafting a more sensitive and regional approach to resource management objectives. Considerable effort was given to evaluating the timber resource by isolating the varying commercial values and defining the factors which promote (or limit) profitable logging as a basis for making judgments on the region's long-term economic timber supply.

This led to the definition of a timber-management concept based on "operability," which defines the factors contributing to profitable logging and applies them "to the ground" to outline areas with high, medium, and low operability. Logging technology and transport assumptions are an integral aspect of this concept as are financial and physical feasibility criteria inherent in different terrain and timber types.

This concept represents a new approach to assessing available timber resources and with the help of a skilled consultant was well advanced at the end of the year. Workshops have been held with representatives of the B.C. Forest Service, local logging companies (and contractors), local equipment companies, and financial institutions to refine the concept and improve mutual understanding of its practical application.



The operability concept and the biophysical classification system should be useful in assessing resource opportunities and limitations elsewhere in British Columbia. Both contribute to a better definition of the sustaining resource base. Thus, the biophysical potentials of the timber base can be integrated to economic potentials under assumed (cyclical) market conditions to develop more realistic assessments of the capability of the timber resource to sustain economic forest production.

Consultation in the course of study indicated that administrative as well as physical factors have a major bearing on resource prospects. Administrative (institutional) factors ranging from international markets, the industrial structure, to regulatory policies and their regional impact were included as appropriate to assist in the goal of assessing regional timber resource potentials. At the end of 1975, this study was well advanced with conclusions available for ELUC consideration midway in the 1976 fiscal year.

(ii) *Spatsizi Plateau*—Another of the unit's major assignments was related to a proposal to create a combination wilderness conservancy and ecological reserve in the Spatsizi Plateau of north-western British Columbia. A major focus of this exercise was to achieve consensus on appropriate boundaries and to identify means of handling "resource conflicts" within these boundaries. An interdepartmental task group was assembled to evaluate this proposal and make recommendations on the basis of resource inventories. Results of these inventories, undertaken in the 1974 and 1975 field seasons, indicated that

- Spatsizi possessed outstanding wildlife values and is a scenic alpine plateau with high recreation values;
- timber and mineral values were low.

Successive study sessions led to development of park boundary proposals which minimized ad-

verse effects on resource development potentials while protecting key wildlife and recreation values. The task group recommended creation of Spatsizi Plateau Wilderness Park and Gladys Lake Ecological Reserve. It further recommended that both consumptive and nonconsumptive wildlife values be planned for, through a process incorporating public participation. Acceptance of the task group's recommendation was announced at the 27th Annual Meeting of the Ecological Reserves Committee in November 1975.

(iii) *Coal development proposals in the Southeast Kootenays*—Rising demand and prices were a major factor behind a renewed interest in extraction of coking and thermal coal for international and domestic markets respectively. Preparation of the draft *Guidelines for Coal Development* helped ensure a more comprehensive evaluation of individual coal developments by the mining companies, but there was a need to assess the cumulative impact of a number of coal development proposals on the region as a whole. Recognizing these potential regional development implications, the ELUC instructed the Secretariat to co-ordinate a regional planning investigation in concert with other Provincial agencies. Much of the impetus came from concerns of regional district and municipal officials and citizens who were anxious that any coal development proceed in a planned manner.

The main thrust of this investigation has been the development of biophysical mapping to assess resources capabilities in the region and examination of community development opportunities in the area to accommodate potential population increases. A number of coal companies had prepared a prospectus of their developments, thus initiating the environmental and social impact

review process as outlined in the *Guidelines for Coal Development* (see Director's Report, pages 12 and 13).

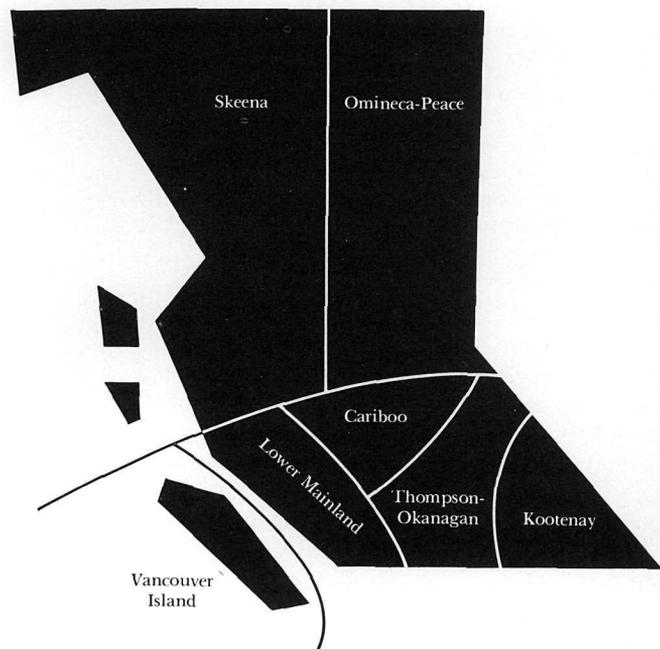
(iv) *Resource Management Regions*—Seven Resource Management Regions were established in 1974 to co-ordinate the regional operations of the resource departments represented on the ELUC. During 1975, individual departments continued to reorganize their staffing and administrative boundaries to fit into this concept. To facilitate the implementation of these regional groups, the Secretariat co-ordinated the preparation of boundary descriptions through large-scale mapping and detailed documentation of earlier interagency boundary decisions.

In the Skeena Resource Management Region, the unit established an office, staffed with one individual to

- function in a supporting role to the Resource Management Committee;
- co-ordinate integrated resource management assignments in the region.

This decentralized approach has in the Secretariat's judgment proven successful, and has contributed to the depth of interdepartmental investigations undertaken and the quality of the recommendations to ELUC. Eventually it is hoped that a small staff can be placed in each of the seven Resource Management Regions.

RESOURCE MANAGEMENT REGIONS



Short-term Investigations

A variety of projects, shorter in duration or sub-regional in scale, were also undertaken. Several of these projects were developed in the Skeena Region.

(i) *Smithers Winter Recreation Study*—Conflicts between snowmobiles, skiers, and conservationists have developed over use of winter recreation areas in the Smithers area. In response, the Secretariat and Fish and Wildlife Branch (in Skeena) co-sponsored a study to determine the biological effects of snowmobiling in various alpine areas. Simultaneously, a public participation program involving concerned groups was initiated. Citizen representatives plus personnel of Parks and Fish and Wildlife Branches worked to resolve differences of view, facilitated by the Secretariat. As a result, a winter recreation area "system" has been devised enabling each type of winter recreationalist to enjoy their particular activities without infringing on the opportunities of others or creating environmental damage.

(ii) *Babine Integrated Management Unit*—Work progressed in the detailed development of a new form of multi-resource administration called the "Integrated Management Unit" (IMU), using the Babine Mountain area near Smithers as a pilot project. The IMU is a technique designed to manage multiple resource values in areas where the prevailing resource theme is one of preservation (be it of vegetation, wildlife, landscape, etc.) and no single resource use or value is dominant. Planning for integrated resource use is undertaken by an interagency committee which identifies and arrives at consensus for appropriate zoning of resource values and use policies. Management zone boundaries arrived at by consensus are amenable to change as integrated management considerations evolve over time. This approach to complex and sensitive resource areas is not a panacea yet it does provide a method of in-depth integrated management whereby several agencies jointly set and evolve policies for managing areas

having a range of resource values. It promises to provide a suitably flexible type of management for complicated resource areas such as the Babine Mountains.

(iii) *Kispiox Valley Study*—Recommendations by residents of the Kispiox Valley that the upper region of the Kispiox watershed should be set aside as a wilderness area led eventually to the development of a Kispiox Valley Citizens Advisory Resource group. Initial resource reconnaissance of the upper Kispiox completed in 1974 had shown that although the area did not have sufficiently unique values to qualify it for proposed wilderness status, several values seemed outstanding. More comprehensive inventories carried out in the area during 1975 affirmed that the upper Kispiox possesses

- high fisheries values (steelhead, salmon),
- high wildlife values (grizzly bear),
- high watershed regulating values,
- moderate wildland recreation values,
- moderate timber values,
- low mineral values.

Joint discussion between the appropriate agencies and local citizens' groups concluded that these values could all be managed properly (perhaps as an IMU, or under the Forest Service "Portfolio System") in an integrated fashion, if suitable advance planning was undertaken. At the end of 1975, discussion between resource agencies and citizens to engage in such planning was continuing.

(iv) *Adams River*—The Adams River, located near Shuswap Lake, contains some of British Columbia's most valuable spawning-grounds for Pacific salmon. In mid-1975, following a report by Parks Branch, the ELUC placed a reserve against further land development in this critical stream corridor pending further investigation into

Other Investigations

resource protection and management requirements. This work was well under way as of the end of 1975.

(v) *Stream corridor protection*—The Adams River was one of several cases stimulating ELUC to instruct the Secretariat to undertake a review of legislation and techniques used in other jurisdictions for securing public interests in stream corridors. This investigation, substantially aided by the consulting efforts of the West Coast Environmental Law Centre, was also well under way at the end of 1975. The objective was to produce an interim report outlining the major issues and jurisdictional controls for submission to the ELUC in early 1976.

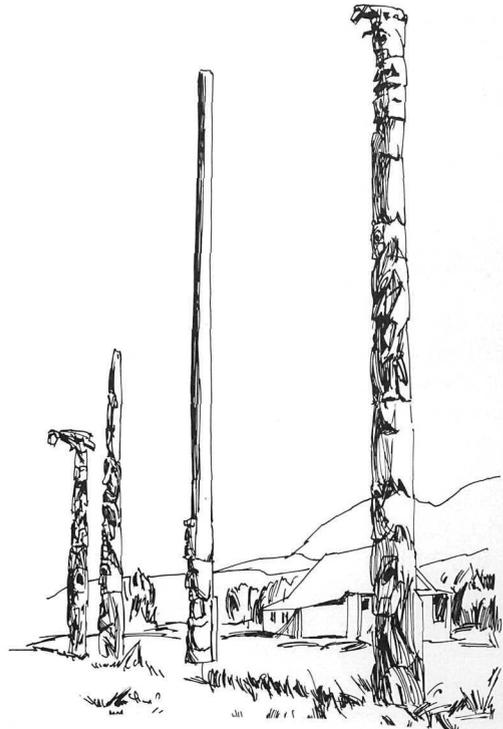
(vi) *Bonaparte-Tranquille Plateau*—The Bonaparte-Tranquille Plateau study was initiated in 1974 after citizen interest groups in the Kamloops area requested an integrated resource study to resolve conflicts between forestry, wildland recreation, wildlife management, and watershed protection.

The study was undertaken in 1975 by the Thompson - Okanagan Resource Management Committee under the leadership of the Forest Service. ELUC placed the core of the study area under a development moratorium pending completion of the study and acceptance of recommendations of integrated resource management by the ELUC. A draft report was completed in late 1975 and would be reviewed by other agencies pending submission to ELUC in 1976.

Other Investigations

(i) *Kitwanga-Meziadin Highway environmental and social impact assessment*—The Department of Highways, Design and Surveys Branch, requested the Secretariat and the Environmental Services Unit of the Lands Service to assist in the preparation of terms of reference for and management of a consultant project to examine the environmental, social, and economic impacts of the proposed upgrading and realignment of the public and forest industrial road linking Kitwanga with Meziadin Lake.

As a general route alignment had already been selected by Highways prior to the study, the focus of the assessment was thus to ensure this route



did not adversely affect valuable aquatic and terrestrial habitats, land use potentials, or settlements in the area. The consultants were instructed to discuss the proposed upgrading of access through the area with local residents and determine their view of advantages and disadvantages this would bring to area residents. These included such factors as increased accessibility to medical services as well as job opportunities on one hand and pressure from increased "outside" use of locally used resources on the other.

This was the first major impact assessment of a major highway undertaken by the Department of Highways. As such it has set a precedent for future studies and has provided a model from which much has been learned regarding impact assessment procedures for highways and other linear developments such as railways, transmission lines, and pipelines.

The Kitwanga study report—consisting of four volumes—was completed in December 1975. It will undergo a lengthy review process in view of the need to ensure that all potential impacts are thoroughly understood by all agencies so that appropriate steps can be taken to avoid, mitigate, or compensate for these.

The study also included public participation. Draft copies of the study were made available to local residents and their comments were fully used in preparing the final report and recommendations.

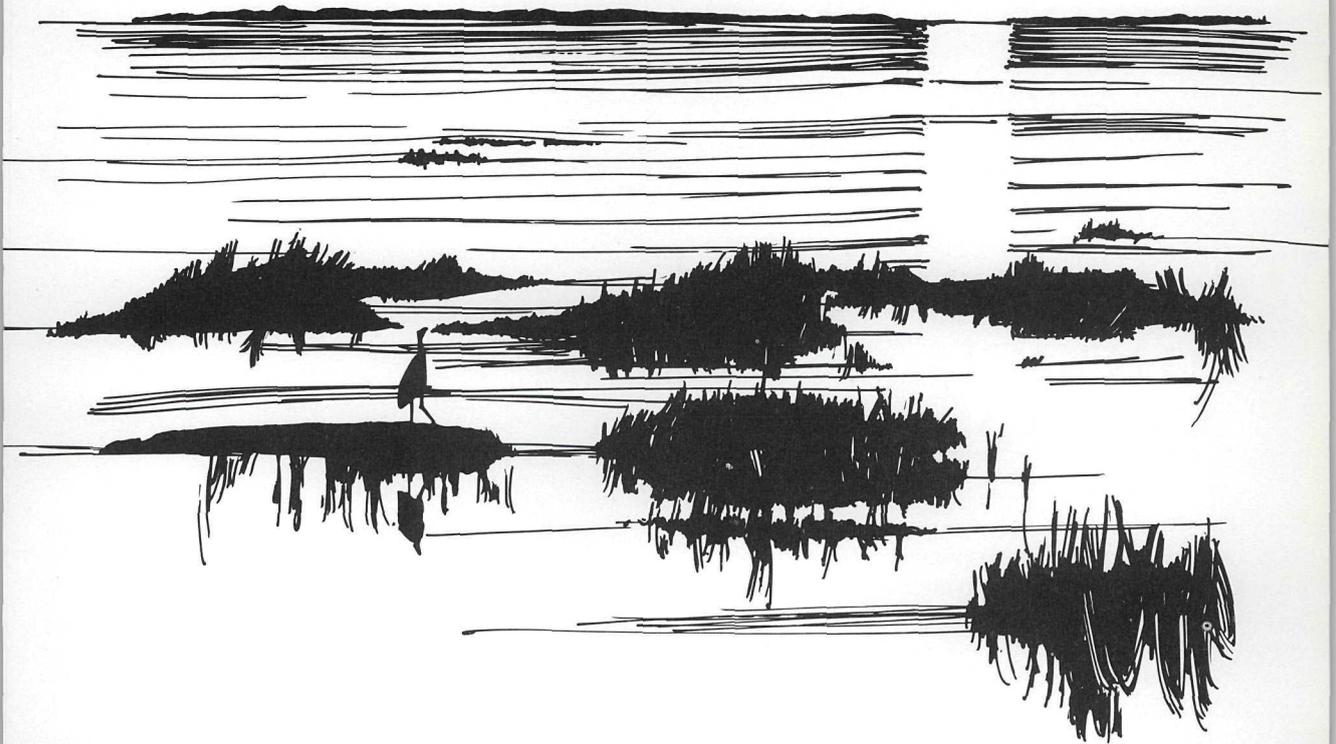
(ii) *Quality of life in resource communities*—Most of the major resource developments in British Columbia over the past 15 years have led to the development of "instant towns" to accommodate industry and service workers and their families. Many residents of these communities have and some continue to experience what they consider serious problems affecting their quality of life. Complaints range from concern about the

levels of local goods and services to the availability and cost of housing, municipal tax levels, company involvement in community life, etc.

As part of its responsibility for integrated resource planning and project impact assessment, the Secretariat has been carefully examining the nature and cause of problems associated with resource communities in an endeavour to determine what can be done to improve conditions for the residents of existing and future resource communities.

In early 1974 the Secretariat and the Federal Government's Ministry of State for Urban Affairs collaborated on a study to examine quality of life issues and solutions to these. A Canada-wide study was funded by the Ministry in 1974 and 1975, resulting in a Ministry/Information Canada Publication *Quality of Life in Resource Communities*, which offers many useful insights and suggestions. A sequel to this study is planned for 1976 to examine the role of Government (all three levels) and industry in resource community development planning, financing, and administration. This study will again take a national perspective and should provide some direction for the Provincial Government for application in future resource community developments in British Columbia.

Closer to home, the Secretariat and the Department of Mines and Petroleum Resources have jointly sponsored a study of the relationships between job and community dissatisfaction in the mining industry. Residents of six communities were surveyed in 1975 by summer students under direction of a consultant from Simon Fraser University. The results provided some useful direction on measures that can be used by Government and industry to reduce labour turnover in the mining industry.



Special Projects Unit

Introduction

The role of the Special Projects Unit is similar to that of the Resource Planning Unit, though the focus of the unit's activities has been centred on continued improvement of integrated resource planning procedures. In the first year of operation, the unit initiated the development of project evaluation methods such as environmental impact assessment and benefit-cost analysis. This year, the unit has consolidated these initial steps through

completion of guidelines for environmental assessment of hydro projects and advancement of the benefit-cost guidelines. These procedures have been applied to a number of projects, including new coal developments with the drafting of Coal Development Guidelines.

This report highlights the unit's activities in a number of different projects, each of which fits into the range of roles outlined in the Director's report.

Environmental Impact Assessments

The Special Projects Unit is the main point of contact within the Provincial Government for Crown agencies and private industry undertaking environmental impact assessments of proposed developments. For most major projects, a four-stage review process has been established as described in the Director's report and has been applied to a number of proposed hydro projects, transmission lines, pipelines, rail and road developments, and major industrial developments such as oil refineries (see Table 1). With a few

exceptions, these impact assessments have been undertaken by consultants hired by the developing agency and the unit has been active in liaising with these consultants to ensure the study terms of reference are broad enough to encompass the concerns of all Provincial agencies.

At the end of the year, as the various regional resource management committees were established, arrangements were made to include the appropriate committees in the review process.

Table 1—Impact Assessment Reviewed by the Secretariat and Other Provincial Agencies in 1975

| <i>Agency</i> | <i>Proposed Development</i> |
|----------------------------------|--|
| <i>Energy Developments</i> | |
| B.C. Hydro..... | Vancouver Island Thermal Power Station Site Study. |
| B.C. Hydro..... | Hat Creek Thermal Power Station. |
| B.C. Hydro..... | Sites C and E, Peace River. |
| B.C. Hydro..... | Revelstoke-Downie, Columbia River. |
| B.C. Hydro..... | Kootenay Diversion. |
| B.C. Petroleum Corporation..... | Oil Refinery, Fraser Valley, Merritt. |
| Mohawk..... | Oil Refinery, Fraser Valley. |
| <i>Gas Pipelines</i> | |
| Alberta Natural..... | Crowsnest Pass-Kingsgate Pipeline. |
| Canadian Arctic Gas..... | Crowsnest Pass to Kingsgate Pipeline. |
| Westcoast Transmission..... | Territories Mainline Extension to Fort Nelson. |
| <i>Transmission Lines</i> | |
| B.C. Hydro..... | Nicola-Cranbrook 500-kv line. |
| B.C. Hydro..... | G.M. Shrum to Prince George 500-kv line. |
| B.C. Hydro..... | Pike Lake-Campbell River kv line. |
| B.C. Hydro..... | Canal Flats to Golden 230-kv line. |
| <i>Transportation</i> | |
| B.C. Ferries..... | Lower Mainland to Vancouver Island Routes. |
| CN Rail..... | Meziadin Project. |
| CN Rail..... | Clinton-Ashcroft Connection. |
| CP Rail..... | Tapen-Notch Hill Double Tracking. |
| B.C. Department of Highways..... | Kitwanga-Meziadin Highway. |
| B.C. Department of Highways..... | Fort Nelson to Fort Simpson (NWT) Highway. |
| B.C. Forest Service..... | Houston-Ootsa Road. |

Long-term Studies

(i) *Williston Reservoir Study*—The ELUC and B.C. Hydro jointly commissioned a study of resource potentials in and around Williston Reservoir in 1974. A multi-agency study team chaired by the Special Projects Unit presented an interim report on the first year's studies to ELUC in April. This report indicated that the reservoir had significant populations of sport fish and lake white fish (potentially a commercial fish), but that the sampling of water quality and biological productivity in the reservoir was too sparse to develop any conclusive results. Accordingly, ELUC and B.C. Hydro agreed to extend the fishery and limnology programs as well as the wildlife studies for another year to complete more detailed sampling studies.

A complete biophysical inventory of the lands bordering the reservoir has been undertaken and a wide range of resource capabilities derived from this data base. This information will aid the Forest Service to prepare resource folios for timber harvesting, the Lands Branch to design rural subdivisions, and the Fish and Wildlife Branch to develop a wildlife management program for the area. The final report is to be completed in 1976.

(ii) *Cowichan Bay Study*—The Special Projects Unit co-ordinated an inter-agency study of the impacts of various levels of development in Cowichan Bay in 1974. The ELUC decided to maintain the existing level of development in the estuary but follow-up studies were undertaken during 1975 to ensure that the reconstruction of an existing sawmill near the estuary met strict environmental standards, and to determine the benefits and disbenefits on initiating a comprehensive flood control program for the Cowichan River.

(iii) *Salmon Enhancement Program*—The Federal Government has proposed a large-scale salmonid enhancement program for the west coast

fishery which, at full scale, could increase the current populations of Pacific salmon and anadromous sea trout (cutthroat, steelhead, and Dolly Varden) to historical levels. Before launching a full-scale enhancement program, however, the Federal Government has proposed a two-year planning phase to improve bioengineering understanding of enhancement techniques, and to undertake some socio-economic studies.

The Provincial Government has a strong interest in the program for several reasons:

- Whatever net benefits the program generates will potentially accrue largely to residents of the Province of British Columbia.
- Implementation of any particular salmonid enhancement project may well require re-channelling or curtailment of other resource uses, e.g., forestry, water resource maintenance and improvement, land development, hydro, and estuary protection over which the Provincial Government has direct responsibility.

The involvement of the Special Projects Unit has to date consisted largely of assistance to the Fisheries and Marine Service in the establishment of a socio-economic evaluation framework to be applied to projects and to the entire program. In particular, the focus has been to identify the elements of economic analysis which are critical to the Province, and to ensure that the analysis is completed to a standard that is satisfactory to the Province.

Independent Project Assessments

(i) *Pend-d'Oreille Study*—In April 1975 the Water Comptroller held a public hearing under the *Water Act* to consider the location of an access road along the Pend-d'Oreille River to haul gravel from the Columbia to B.C. Hydro's hydro-electric project on the Pend-d'Oreille River. Three alternative routes were suggested, one route along the south side of Pend-d'Oreille and two routes along the north side. Following the hearing, the Water Comptroller selected a north side route near the river and also asked B.C. Hydro to pay the Fish and Wildlife Branch \$1.8 million in compensation for losses of wildlife habitat.

This decision was appealed and the Secretariat was asked to review the economic, biological, technical, and social data involved in route selection analysis. Following this review, the original decision was upheld by a Cabinet committee acting as an appeal tribunal, but the Secretariat was asked to examine the amount and type of financial settlement B.C. Hydro must pay the Fish and Wildlife Branch to compensate for lost deer habitat.

The Fish and Wildlife Branch was preparing a wildlife and range management plan for the Pend-d'Oreille valley involving the purchase of key wildlife habitat at the end of the year and recommendations to ELUC are expected in the spring of 1976.

(ii) *Agricultural Land Reserves (ALR)*—The ELUC, as Cabinet Committee responsible for reviewing Agricultural Land Reserve Proposals of the Land Commission, requested the Secretariat to co-ordinate an interdepartmental review of such proposals. In 1975, Agricultural Reserve Plans for the five regional districts were approved by ELUC, thus completing the designation of ALR's for all 28 regional districts in the Province.



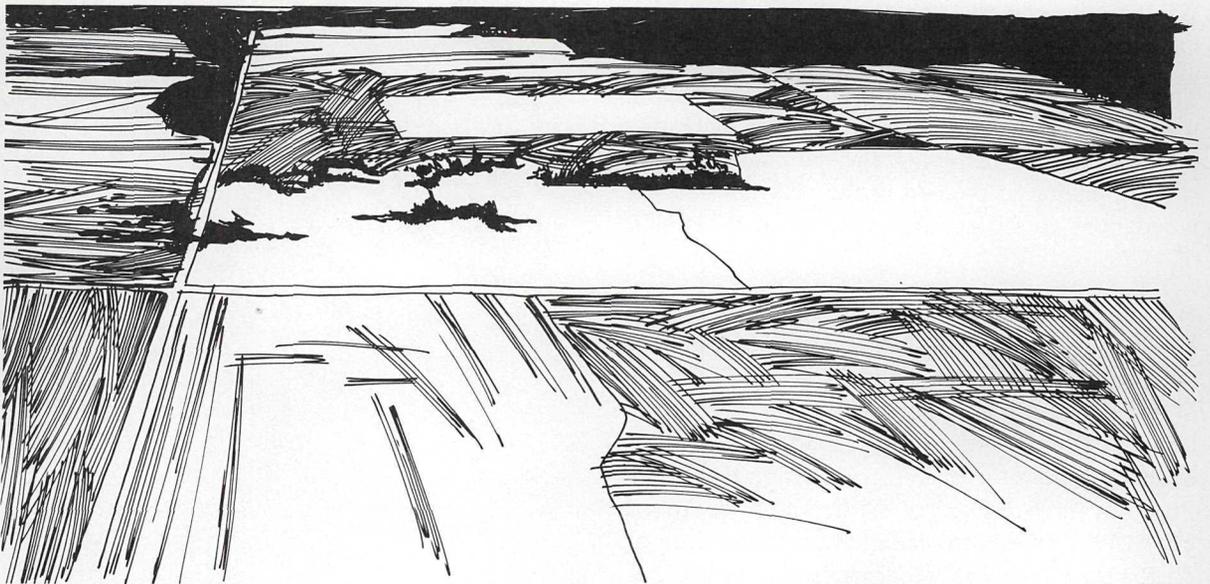
The Special Projects Unit also acted as a liaison between the Land Commission and the Environment and Land Use Committee in the review of ALR appeals and the generation of new data to refine some ALR boundaries. Some of the roles played by the Secretariat included

- the Secretariat's Resource Analysis Unit assembled folios involving baseline and interpretative data on soils, climate, terrain, aquatic, and cultural systems for use by the Land Commission in planning specific areas around Sardis and Fort Langley;
- appeals to the Environment and Land Use Committee under section 9 (7) of the *Land Commission Act* were processed by the Special Projects Unit of the Secretariat;
- certain aspects of block appeals from municipalities and regional districts to Cabinet were further researched by the Secretariat at the request of the ELUC;
- some concerns raised by the public regarding Agricultural Land Reserves were investigated

by the Secretariat, and in the case of the riverside properties in Richmond, a public hearing was held and the results summarized for ELUC by the Secretariat.

Perhaps the most significant aspect of the Secretariat involvement in ALR's was the initiating of a task force in late 1975 to consider problems related to Agricultural Land Reserves in the areas of resource management (e.g., determining resource use priorities in ALR's) and urban fringe pressures, with a view to developing processes for resolving these problems.

(iii) *Sewage disposal*—The Secretariat, in conjunction with representatives from other departments, carried out a review of the administration of sewage disposal in unorganized areas of the Province and recommended a number of changes to the Committee. As a result, some improvements in procedures have been established and the sewage disposal regulations have been amended.



Short-term Projects

The Special Projects Unit also directed a number of short-term project investigations, some of which continued into 1976 for presentation to the ELUC.

(i) *Annacis Island Sewage Treatment Plant Study*

—In April 1975 a Cabinet Committee instructed the Secretariat to convene a committee to prepare a time schedule for implementation of secondary treatment of effluent discharged from the Annacis Island Sewage Treatment Plant. This issue arose from an appeal by the Greater Vancouver Regional District against the need for secondary treatment because of the high dilution capacity of the Fraser River.

The Secretariat pulled together a group of experts from the Federal, Provincial, and regional levels of Government and the University of British Columbia. This group has agreed that discharge of nutrients, biodegradable chemicals, and suspended solids from Annacis does not cause any significant environmental problems at present, but that the main pollution problem is the release of toxic materials such as trace metals, detergents, and ammonia. The Committee has examined the costs and effectiveness of both source controls and two secondary treatment alternatives, activated sludge and physical-chemical treatment for controlling the discharge of toxic materials, and expects to report back to Cabinet in the spring of 1976.

(ii) *Arrow Lakes*—The Secretariat has been involved in two inter-related studies on the Arrow Reservoir. The first involves good land use planning on the lands B.C. Hydro purchased prior to reservoir development in 1964. Over the next two years, approximately 175 former landowners will be given the opportunity to resettle on some of these lands, but efforts are being made to ensure that this resettlement fits into an over-all land use plan for the reservoir. Existing information on wildlife, recreational, agricultural, and

urban land capability has been assessed and is being used in the preparation of a land use plan. Resettlement plans for the most of the reservoir, with the exception of the southeast corner, have been approved in principle.

A second and related study, chaired by the Water Resources Service but involving the Secretariat, Fish and Wildlife Branch, and Parks Branch, has been initiated to determine, if possible, whether the present regulation of the Arrow Reservoir can be modified for improved recreational, fishery, and land management. Studies have indicated that the present operation cannot be changed significantly without large costs due to lost power potential at Mica, though some improvement in summer lake levels could be possible. Management plans for recreational lands and sport fishery are now being prepared by the Department of Recreation and Travel Industry, accounting for expected reservoir fluctuations.

(iii) *Serpentine-Nicomekl Drainage Study* — Approximately 1,200 acres of the Serpentine-Nicomekl lowlands subject to poor drainage due to their low elevation (below high-tide levels) and increasing urban development on the surrounding uplands with consequent more rapid run-off. This problem has been examined for a number of years under the Federal-Provincial Fraser River Flood Control Program, but failed to qualify for funding because total costs of drainage and dyking exceeded benefits.

The Secretariat was requested by the ELUC to resolve the drainage problem by convening a group of experts from Water Resources, Agriculture, Land Commission, and Fish and Wildlife. This group has examined a smaller scale proposal which would improve drainage in part of the floodplain where agricultural benefits can be quickly realized, develop some of the very poorly drained areas for wildlife management, and upgrade the dykes to safety standards. The eco-

conomic benefits of this scheme are now being evaluated by the Department of Agriculture and the Fish and Wildlife Branch. A report on this design should be presented to ELUC early in 1976.

(iv) *Coastal Zone Studies*—The Special Projects Unit has been involved in developing a rational approach to shoreline management using the principles of integrated resource management developed for other regions of the Province. Several coastal areas subject to development pressures have been studied by the Unit. As part of the Cowichan Bay Study, alternative port sites on the east coast of Vancouver Island were examined to seek possible ports whose development would create less environmental problems. The study indicated that sites in the vicinity of Harmac, near Nanaimo, were best suited for forest products shipping. The Nanaimo Harbour Commission has proposed a new port at Duke Point, and following review of this site by the Secretariat, ELUC agreed to provide some Provincial funding to support its development.

The study of Comox Harbour water quality was completed by the Pollution Control Branch and reviewed by the Secretariat in May of this year. Implementation of the recommendations in the study was delegated to the Vancouver Island Resource Management Committee. The recommendations included the undertaking of detailed monitoring of water quality in tributary streams and in the harbour to determine more accurately the nature and degree of coliform contamination.

In Howe Sound, at Britannia Beach, residential development proposals have been studied with regard to slopes, soil stability, flooding hazards, and the need to preserve future options for other uses.



Resource Analysis Unit

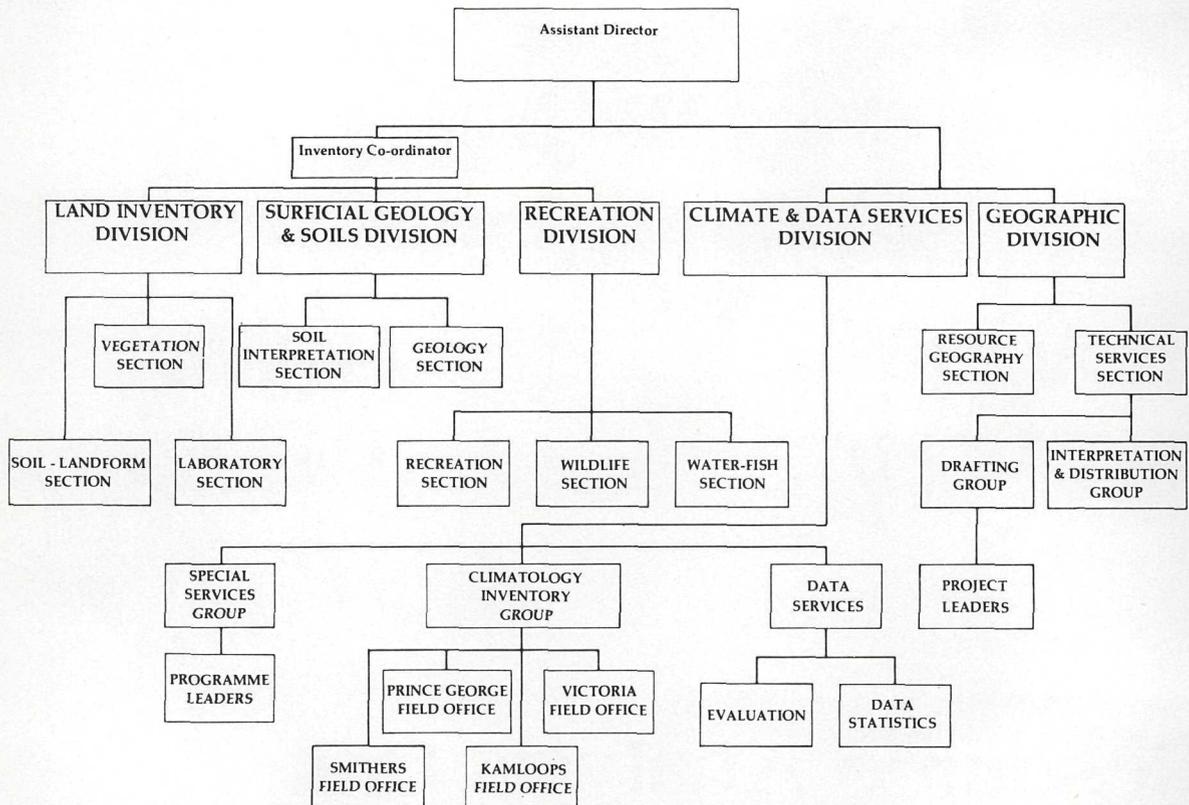
Introduction

The Resource Analysis Unit, formerly known as the B.C. Land Inventory, is a multi-disciplinary group of highly trained professionals who undertake inventories and interpretations of the biophysical resource base. The Unit contains surficial geologists, hydrologists, climatologists, fisheries biologists, pedologists, wildlife biologists, as well as resource geographers. In addition to developing resource capability maps, the Unit also

undertakes biophysical analysis of environmental impacts associated with major development projects.

Although the Unit was established as part of the ELUC Secretariat in January 1974, the transfer of soils personnel from the B.C. Department of Agriculture is still not complete. Since the soil survey assesses the land base common to all resources, it is much more effective in the Secretariat where it serves all resource departments rather than in a single department.

RESOURCE ANALYSIS UNIT



The four basic inventory functions in the Resource Analysis Unit are as follows:

- (1) Soils/Landforms.
- (2) Surficial Geology/terrain analysis.
- (3) Vegetation.
- (4) Climate.

A laboratory in Kelowna serves the first three inventory groups, while an instrument/electronic laboratory is available in Climatology. These groups serve all resource departments and are most effectively housed in a neutral agency.

In addition to the foregoing, there are some secondary inventories undertaken by the Unit. These are:

- (1) Water/fish.
- (2) Recreation.
- (3) Wildlife.
- (4) Present Land Use.

The first three are developing methodologies for line departments and are modifying the classification of the basic inventories so that they can be more useful for the respective line departments. These inventory groups will phase out of resource inventories as soon as possible in favour of line departments and instead will perform a liaison and implementation role between basic inventories and user departments. In addition, they are available as part of the whole Resource Analysis Unit for special project studies, impact assessments, continual upgrading of basic inventories, and interpretations to evaluate trade-offs among resource uses.

Characteristically, the members of the Resource Analysis Unit are a closely integrated (know each other's specialties) group of resource professionals with no management or line department bias. For example, members of the soils group in addition to being pedologists are also either pro-

fessional agrologists or professional foresters. Similar dual qualifications are held by most other members of the staff.

Resource Analysis field groups generate a great deal of data, some of which are displayed on maps, and some stored in files or in computers with or without prior computer manipulation (depending on use and kind of data). To handle this material, the Unit has a drafting and data processing staff.

The draughting staff, like all staff members, are well integrated into the unit. They undertake occasional field work as members of field crews, thus enabling them to appreciate the nature of the material they will be later plotting. The draughting group is backed by a small group of professional geographers which supplies expertise in cartography and photogrammetry and undertakes geographical analyses from a social/demographic or a physical/distributional standpoint. The geographers work very closely with other Units of the Secretariat and in liaison/co-ordinative roles with other departments.

The data handling group also has a dual role. It handles, banks, and produces data from the Unit's collections. In addition, it provides systems analyses and data flow analyses both for the Secretariat and for other resource departments via liaison committees and research arrangements. As computing capability (hardware and software) can save time and make data for decision-making more readily available, these facilities have the potential to achieve cost savings.

The Unit chairs the Data Users Committee, which ensures efficient use of data and computer programs for resource inventories by all Provincial agencies. The main aim of the committee is to co-ordinate the requirements of the user to avoid waste or duplication of effort.

Surficial Geology and Soils Interpretation Division

INTRODUCTION

The primary function of the Surficial Geology and Soils Interpretation Division is to provide the physical data base for resource inventory and interpretations from these base data to aid resource management decision-making. This function is served by air photo interpretation and field programs, mapping landforms and materials, observing the processes acting upon them, recording stratigraphic information, and collecting materials samples for laboratory testing. These programs form a part of the multi-disciplinary resource data gathering function of the Resource Analysis Unit, and require extensive co-operative effort in all resource areas.

A secondary, and important, function of the Division is to deal with numerous, wide-ranging requests for geological and soils information in specific problem areas such as slope stability, natural hazards, timber harvesting lay-outs, agricultural land reserves, urban suitability, forest productivity, and environmental impact assessment.

SURFICIAL GEOLOGY SECTION

This section involves three types of projects:

1. The collection of basic surficial geology data (inventory). This is carried out chiefly by means of air photo interpretation and field observations, backed up by limited laboratory analysis. The information is presented as maps (at scale of 1:125,000) and accompanying reports.
2. Provision of surficial geology maps to other Resource Analysis Unit divisions and to other Provincial and Federal Government departments. These data are used as a basis for inventory mapping of such things as vegetation and wildlife whose distributions are partially controlled by the nature of the surficial materials.
3. Provision of information and advice at the request of public and private external agencies that are involved with resource development, industrial and urban siting or expansion, and construction of transportation routes.

The terrain classification system that has been used as the basic mode of data collection (surficial geology and landform mapping) for the past several years was originally developed by R. J. Fulton of the Federal Geological Survey. This scheme is currently under study by members of the Division with the aim of producing a comprehensive, self-explanatory guide to this mode of mapping and the collection of related additional data. Discussions and workshops were held with other groups who will utilize the information gathered by this means (including other Resource Analysis Unit divisions, B.C. Department of Agriculture, Agriculture Canada, Soil Research Institute, the University of British Columbia, and representatives of the logging industry).

INVENTORY PROJECTS

1. The Northwest British Columbia Project was initiated in May 1975. It involves terrain mapping (surficial geology and landforms) of the Stewart (104ASE/SW) map area. This information will be used as a guide to management and conservation during future resource development in the area.
2. The Kluskus Project commenced in March 1975. Surficial geology and landforms, soils, and vegetation are being mapped for the Burns Lake (93F SW) map area. The information gathered will be used as base data for a resource management study.
3. Since May 1975, surficial geology, landforms, and soils mapping has been undertaken in co-operation with other Resource Analysis Unit staff in the East Kootenay region in map areas 82C (Ferne) and 82J (Kananaskis Lakes) (southern

half). In general, the information will be used for resource planning and management. In particular, these data will be used by the B.C. Forest Service in the East Kootenay area in relation to the control of slope stability and erosion during logging operations, and in the East Kootenay coal areas as an aid in planning the layout and reclamation of mine sites and their access routes (*see* Resource Planning Unit Description).

4. Terrain maps and report for Seymour Arm (82M, west half) map area have been completed.
5. Terrain maps for southern Vancouver Island (92C) have been completed.
6. Terrain mapping with particular reference to slope stability is under way for Graham Island, Queen Charlottes (parts of 103K and 103F).

SPECIAL ASSIGNMENTS

1. Terrain mapping and slope stability rating of Carney River drainage basin (Lardeau PSYU) was undertaken in order to provide base data for a park proposal. This is a co-operative project with B.C. Department of Agriculture personnel who are administratively attached to the Resource Analysis Unit.
2. Mapping and analysis of geomorphic processes affecting slopes and their significance to future resource development is ongoing in the Skeena Mountains, northern British Columbia (104H). This is also a co-operative project with B.C. Department of Agriculture personnel.
3. In conjunction with Canada Department of Agriculture, alpine soils, vegetation, and surficial geology were studied in the Omineca and southern Cariboo Mountains (93N).
4. Educational programs concerned with the teaching of surficial geology and terrain mapping were offered to various levels of government and private industry.

SOILS INTERPRETATION SECTION

The functions of the Soils Interpretation Section are many and varied but generally relate to the following four functions:

1. To undertake and participate in soil and landform inventory programs with inventory personnel from the Land Inventory Division.
2. To undertake special projects related to interpretations of physical data for land use planning as requested by various Government agencies and other sections of the Environment and Land Use Committee Secretariat.
3. To originate and co-operate in research projects related to interpretations of land-based information required for the many facets of land use planning.
4. To provide educational seminars and workshops directed toward instructing various users of land-based information in the methodologies employed in collecting the data and the techniques used to interpret these data.

Some of the more important projects undertaken by the Section are listed below:

1. In co-operation with the Land Inventory Division, personnel were involved in soil and landform inventory projects in the following three localities:
 - (i) East Kootenays.
 - (ii) Northwest British Columbia (103P/1 to 4; 1030/1).
 - (iii) Gulf Islands (92G/4; 92F/8, 9 part).

These projects are presently ongoing and will result in maps portraying the various surficial deposits and soil types occurring in these landscapes.

2. In conjunction with the inventory program in northwest British Columbia, an overview of forest productivity was mapped as input into the Terrace-Hazelton Forest Resources Study (*see* Resource Planning Unit Description).

3. Various smaller inventory and interpretation projects were undertaken and completed.

- (i) An assessment of the proposed plan for development of the Britannia Beach area by Anaconda Britannia Mines.
- (ii) Investigation of the surficial materials and soil characteristics of the proposed Stave Lake Provincial Park with interpretations directed mainly toward camp-site development and road location.
- (iii) An inventory of the surficial materials and landforms in the proposed Grouse Mountain development area; these data are used as part of the information required to assess the suitability of various portions of the landscape for urban development.
- (iv) Investigation of the surficial materials and soil characteristics as related to urban suitability for the expanded portion of the town of Golden, B.C.
- (v) Reconnaissance biophysical investigations of the proposed Fort Nelson to Fort Simpson Highway to provide background data required to assess the environmental impact of the project.

4. Technical expertise was provided to the B.C. Forest Service in terms of soils and geomorphological information as part of the CARP (Computer Assisted Resource Planning) program. This input was restricted mainly to providing interpretations of the physical inventory data for the Cranbrook PSYU. The Section provided technical aid and acted as co-ordinator for the subdivision of the PSYU into various types of Environmental Protection Forests and the definition of "land classes" which will form part of the input to CARP for the Cranbrook PSYU.

5. Various projects were completed for the British Columbia Land Commission. These were generally of two types. A review of Agricultural Capabilities in specific areas to improve/refine the

Agricultural Land Reserve boundaries, and interpretation of soils-related information to form part of a folio for lands administered by the B.C. Land Commission (*see* Special Projects Unit Description).

6. Educational programs in the form of seminars and workshops were provided to many Government departments and educational institutes throughout the Province. Two, for example, were for forestry students at Selkirk College and B.C. Forest Service trainees at Green Timbers.

Land Inventory Division

Staff in this Division consist of both Soils Branch, B.C. Department of Agriculture and Land Inventory Division, Resource Analysis Unit. As noted in the introduction, most of the Soils Branch staff currently involved in soil, landform, and vegetation inventories, as well as those in the laboratory, are scheduled for transfer to the Land Inventory Division on April 1, 1976, and are presently under the functional administration of the Secretariat. Most projects and programs are co-operative in nature, therefore, no attempt will be made to separate them by jurisdiction. Other agencies co-operating with the Land Inventory Division include the B.C. Pedology Unit, Soil Research Institute, Agriculture Canada; Canadian Forestry Service, Environment Canada, and Geological Survey of Canada.

A major function of the Land Inventory Division is undertaking reconnaissance mapping and systematic inventory and classification of the surficial materials, soils, and vegetation of British Columbia to provide a component of the biophysical baseline information for a variety of resource uses and decisions. This biophysical base is also interpreted by the Division to provide, for example, land capability ratings for agriculture and forestry, suitability and/or limitations for urbanization, susceptibility to erosion and slumping, capability for wildlife habitat, input into environmental impact studies, climatic forest zonation, successional relationships of vegetation to the landscape and forest zones, as well as information for many other land and vegetation-oriented decisions. The reconnaissance inventories also point out environmentally sensitive areas which may require more detailed inspection in the future.

Another important function of the Land Inventory Division is to respond to more site specific requests for soils, surficial materials, and vegetation information. These requests usually are from other resource Government departments which



either do not have the necessary expertise among their own staff or which require a multi-disciplinary approach.

I. SOIL-LANDFORM SECTION

(a) *Reconnaissance Soil-Landform (Surficial Materials) Surveys*—During 1975 the demand remained strong for reconnaissance surveys to provide basic data on soils and landforms (surficial materials). New inventories were undertaken in several parts of British Columbia, with

areas generally chosen in response to requests by other resource departments. Special emphasis was placed on interpreting the data gathered and presenting it in a form and manner which can readily be used in resource planning and management. Maps, graphic displays, reports, and tabular summaries were the most common methods of presenting general descriptions and interpretations for agriculture, forestry, engineering, wildlife, and recreation purposes.

Areas Mapped (Thousands of Acres) (1975)

| Map Area | Soils-Landform Reconnaissance | Capability | |
|---|-------------------------------|-------------|----------|
| | | Agriculture | Forestry |
| 82G, J/S (East Kootenay) | 4,300 | | |
| 103P (Nass River) | 3,300 | 3,300 | 3,300 |
| 92F, K/SW (Central Vancouver Island) | 1,000 | 3,300 | 3,300 |
| 93E/N, L/SW (Morice-Ootsa Lake) | 750 | 750 | 750 |
| 103I, J (Prince Rupert-Terrace-Kitimat) | 4,500 | 4,500 | 4,500 |
| 93F/SW (Kluskus) | 805 | 805 | 805 |
| 1975 total | 14,655 | 10,355 | 10,355 |

To date, total areas for which soil-landform surveys and soil capability for agriculture and forestry mapping are completed as follows:

| | Area (Thousands of Acres) | |
|---------------------------------|---------------------------|---------------|
| | 1975 | Total to Date |
| A. Soil-Landform Surveys | | |
| Initial reconnaissance | 14,655 | 71,544 |
| Reconnaissance resurvey | | 6,280 |
| Detailed resurvey | 30 | 924.5 |
| B. Capability Ratings | | |
| Agriculture | 10,355 | 76,407 |
| Forestry | 10,355 | 88,870 |
| Agriculture reassessment | 4,330 | 7,340 |
| Forestry reassessment | 4,300 | 4,410 |

A major-related activity applied concurrently to all areas inventoried was the gathering of information necessary for the production of land capability ratings for agriculture and forestry. For agriculture, this required an assessment of the range of crops possible under varying soil and climatic conditions occurring on the area, while for forestry, plots were located and measured to obtain an estimation of the mean annual increment (cubic feet of wood produced per acre per year).

The major areas in which reconnaissance surveys were initiated during 1975 centred on the Prince Rupert-Terrace-Kitimat, Morice Lake-Ootsa Lake, East Kootenay, Central Vancouver Island, Nass River, and Kluskus areas. Initial field mapping was essentially completed; however, field checking, correlation, and sampling still are required. A summary of the reconnaissance surveys undertaken during 1975 is as follows:

Manuscript soil-landform and soil capability for agriculture and forestry maps are mostly completed for project areas surveyed in previous years. Areas include West Kootenay-North (82K), West Kootenay-South (82F), South Okanagan (82E), North Okanagan-Shuswap (82L), Columbia-Shuswap (82M), Merritt-Kamloops (921), Bonaparte Lake-North Thompson (92P/E), Prince George (93G/S, J/N), Omineca-Williston-Parsnip (93N, 930/NW, SW, J/N), Babine-Takla Lakes (93M/SW, NW, NE), Vancouver-Langley (93G/S), South Vancouver Island (92B, C). Accompanying manuscript interim reports for West Kootenay-South and North, Prince George, and Bonaparte-North Thompson are expected to be available by spring 1976.

(b) *Special assignments*—A considerable number of special assignments were undertaken upon request in 1975. These assignments differ from regular reconnaissance surveys in that they are usually smaller, problem-oriented, or develop-

mental in nature, and of usually short duration. A summary of the special assignments undertaken during 1975 is as follows:

1. In response to a request from the B.C. Land Commission, a detailed soil survey (approx. 30,000 acres) of the Oyster River area was conducted to delineate the agricultural soils and refine the Agricultural Land Reserve boundaries. Revised soil and agriculture capability maps have been completed and forwarded to the Land Commission.

2. As part of an Integrated Resource Study initiated by the B.C. Forest Service, the Nahmint River watershed was mapped in 1974. During 1975 a landform map and interpretations for forest development and management were completed and submitted for inclusion in the study.

3. In response to a request from Kootenay-Boundary Regional District, maps and reports indicating terrain suitability for urban development and septic-tank effluent disposal in the vicinity of Christina Lake were completed and presented.

4. As in the previous several years, the Soil-Landform Section continued to co-operate with the Forest Productivity Committee's thinning and fertilization trials by inspecting potential forest-plot installations for soil uniformity and, for those installations found acceptable, sampling, describing, and analysing the soils.

5. At the request of the B.C. Department of Municipal Affairs and in co-operation with other sections of Resource Analysis Unit, ELUC Secretariat participated in the preparation of maps and report regarding terrain suitability for urbanization in the vicinity of Golden.

6. Several staff participated in meetings and field tours dealing with the formulation of development plans for the Langley property owned by the B.C. Land Commission.

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7. At the request of B.C. Department of Economic Development, staff participated in evaluating several sites for a possible steel mill in British Columbia by supplying maps and reports dealing with surficial materials, soils, forestry, and agriculture capability and urban suitability.
 8. Sampling and analyses of soils from the City of Vernon sewage effluent spray irrigation project was continued to monitor any changes in soil characteristics. Soils of the proposed extension to the project were also examined and reported upon.
 9. Several staff were involved in examining and assessing several potential areas for sewage effluent spray irrigation for the City of Kelowna.
 10. The proposed area for sewage effluent disposal by irrigation from the City of Cranbrook was examined to determine soil suitability for this purpose.
 11. In conjunction with staff of the Department of Municipal Affairs and Department of Health, several subdivisions in the Alta Lake area were inspected with respect to urban suitability and suitability for ground disposal of sewage effluent.
 12. The Soils-Landform and Vegetation sections are currently mapping in detail the surficial materials, soils, and vegetation in the vicinity of existing and potential coal-mines in southeast British Columbia to provide more accurate baseline information for environmental impact studies and environmental considerations.
 13. Computer Assisted Resource Planning (CARP)—Surficial materials, forest capability ratings, and vegetation data were being finalized for computer input for Cranbrook PSYU. This pilot project is attempting to analyse all available resource information for determining annual allowable cut and also delineate the boundaries of environmental protection forests.
 14. The International Society of Soil Science Congress will be held in Edmonton in 1978. In conjunction with the Congress several field tours through British Columbia have been planned, stop sites chosen, described, and sampled.
 15. As part of the Springbrook Integrated Resource Study, the Soils-Landform and Vegetation Sections provided surficial materials, soils, forest and agriculture capability, climax forest zonation, and present vegetation maps for input into resource folio. This co-operative project involving British Columbia Department of Agriculture, British Columbia Forest Service, Fish and Wildlife Branch, local community groups, and the ELUC Secretariat is designed to determine physical and economic parameters for resolving land use conflicts (*see* Director's report).
 16. At the request of the Lands Service, the Soils-Landform Section mapped in detail the soils and landforms and applied agriculture capabilities to the south side of Williams Lake, Giscome, and Willow River Community pastures. Maps and reports are currently being prepared.
 17. In conjunction with B.C. Department of Agriculture personnel, a first draft of the suitability and yields of various crops as they relate to different soils in the Lower Mainland is being compiled.
 18. Staff conducted on-site inspections of appeals for exclusion from Agriculture Land Reserves throughout the Province at the request of B.C. Land Commission.
 19. The Soil-Landform and Vegetation Sections, at the request of the Resource Planning Unit, ELUC Secretariat, prepared generalized surficial geology, soils, vegetation, and forest capability maps for the Terrace-Hazelton Forest Resources Study (*see* Resource Planning Unit Description).
 20. Several staff prepared and conducted soil-landform, vegetation, and interpretations short courses for B.C. Forest Service personnel in the
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Nelson Forest District and in Victoria. The purpose of the short courses was to improve understanding of the philosophy and methodology of biophysical surveys and how they can be used in forest management.

21. The effects of forest grazing by cattle and the development of community pastures on the fish, wildlife, recreation, and forest resources has continued to be monitored in the Maxan Lake Pilot Project.

22. Several staff participated in the Canadian Transport Commission hearing in Salmon Arm regarding the proposed rerouting of the Canadian Pacific Railway in that area.

23. Several workshops and seminars were attended and/or presented. The primary purpose was to make participants more proficient in the multi-disciplinary aspects of biophysical inventories and also update staff in respect to their professional qualifications. Other notable meetings attended included the 5th Soil Science Workshop and Wetlands Seminar.

II. LABORATORY SECTION

A primary function of the Laboratory Section is to analyse soil and surficial deposits both physically and chemically, and to characterize the samples for mapping and inventories. The Section also analyses samples submitted by other agencies and organizations. For example, all analyses of soil samples from the British Columbia Forest Productivity Committee's Thinning and Fertilization Project were analysed in this laboratory as were samples submitted by forest pedologists located in the various Forest Districts. Other examples included heavy metal analyses of Prince George sewage-sludge samples submitted by Pollution Control Branch and soil samples collected during monitoring of the Vernon Effluent Spray Irrigation Project.



Analysis of almost all samples submitted during 1974 was completed in 1975. Approximately 1,430 samples were analysed entailing about 18,660 separate chemical analyses and 5,000 physical analyses.

The need for an increasing program of physical soil analyses was apparent and it is now necessary to increase technician strength for this purpose. During the summer of 1975, four technicians were employed for a total of 11 man-months. This casual assistance is down from the 1974 figure by a total of three man-months and is reflected by the lag being experienced in soil preparation. Meanwhile the numerical strength of the permanent laboratory staff has remained static from 1973.

Analysis of the current year's samples (1975), numbering about 1,700, has been initiated.

III. VEGETATION SECTION

The main features of the 1975 activities of the Vegetation Section were personnel training, surveying, zonation mapping, communication and correlation, program development, interpretation, and the illustrated keys to plant families of British Columbia.

Since the group expanded by two additional technicians and a professional plant ecologist, emphasis was placed on instructing these personnel in the techniques of forest zonation mapping and surveying. Early in the field season, a week was dedicated to the instruction of survey crews to introduce them to the theoretical and practical aspects of conducting a vegetation inventory. An additional three-week period was used in the field to develop practical application of these principles.

During the summer, surveys were conducted in the East Kootenays (82G, J), Central and Northern Vancouver Island (92E, F, K, L), Skeena-Nass area (103I, J, P), and some additional work

was done in the Kluskus (93C). On these surveys a total of 884 sites were described (*see* Table 2). This number is down from 1974 (1,291) due to the reduction in effective field season time and the relative inaccessibility of the northern parts of the Province. The reconnaissance surveys of Vancouver Island and the East Kootenay were completed, while the survey for the northwestern parts of the Province is continuing.

Because of an anticipated demand, more emphasis was placed on the mapping of forest zones. Earlier in the year, broad forest zonation maps were prepared for parts of 93E, 93F, and 93K. Later in the year, forest zonation maps, present condition and climax, were prepared for the Springbrook (82J, G in part) and for Nelson (82F). Because of the data requirements for the Computer Assisted Resource Planning (CARP) program, the latter maps have been revised to include subzonation lines. For special purposes forest zonation, present condition and climax, were also mapped for the Spallumcheen Municipal District and for the southeastern corner of the Cariboo (92P/1). Presently, forest zonation maps for Vancouver Island and Vernon (82L) are under preparation.

A considerable amount of time was spent on communications within the RAU and with other departments through seminars, workshops, and meetings. Approximately 35 meetings were attended, including a number of biophysical seminars; contacts with B.C. Forest Service personnel with regard to topics such as CARP, Environmental Protection Forests (EPF), Northwest Forest Resources Study; workshops and meetings with B.C. Fish and Wildlife; trips with western soils correlator, vegetation surveys Canadian Forest Service for Southern Vancouver Island, and zonation correlation for the Cariboo Forest District; a number of advisory committees such as the Maxan Lake Project and CARP Advisory Committee; and a variety of administrative and

technical meetings within the Resource Analysis Unit. Meetings of the Vegetation Functional Subcommittee of the B.C. Land Resources Committee resulted in a first draft of a standardized vegetation data collection form. This form has since been used by a number of agencies.

Further development of the program of the Vegetation Section has resulted in the "debugging" of the computer analysis program (Coenos 1) and the streamlining of the data coding procedures. In co-operation with the Recreation Section

(RAU) some interpretation techniques were developed and applied to the data of the Smithers-Hazelton report area and the Spallumcheen Municipal District area.

An illustrated key to the monocotyledon families of British Columbia has been completed. And the key to the dicotyledon families is in progress.

Due to the time devoted to training of personnel and the emphasis on communication and correlation, a backlog of reports to be prepared has been created.

Record of Number of Vegetation Inventory Samples for Project Areas

| Project Area | National Topographic Sheet | Plots Prior to 1974 | Helicopter Plots 1974 | Road Plots 1974 | Helicopter Plots 1975 | Road Plots 1975 | Totals |
|---|----------------------------|---------------------|-----------------------|-----------------|-----------------------|-----------------|--------|
| South Okanagan..... | 82E | 6 | ..... | ..... | ..... | ..... | 6 |
| West Kootenays..... | 92H 82F | 312 | ..... | ..... | ..... | ..... | 325 |
| East Kootenays..... | 82K 82F-E½ | 230 | 13 | ..... | ..... | ..... | 739 |
| Shuswap..... | 82G, J 82L | 280 | 8 | 173 | 87 | 249 | 288 |
| South Vancouver Island..... | 82M | ..... | 9 | ..... | ..... | ..... | 9 |
| Central and North Vancouver Island..... | 92B, C 92E, F, K, L | ..... | ..... | 321 | 16 | 182 | 519 |
| Kakweiken..... | 92K | ..... | 2 | 20 | ..... | ..... | 20 |
| Sheelahant..... | 92M | ..... | ..... | 9 | ..... | ..... | 9 |
| Timothy Mountain, Cariboo..... | 92P | 71 | ..... | ..... | ..... | ..... | 71 |
| Kluskus..... | 92P | 194 | ..... | ..... | ..... | ..... | 194 |
| Kimsquit..... | 93C | ..... | 43 | ..... | 28 | ..... | 71 |
| Northwest..... | 93D | ..... | 19 | ..... | ..... | ..... | 19 |
| | 93E, L, M | 139 | 188 | 210 | ..... | ..... | 537 |
| | 93F | ..... | ..... | ..... | ..... | ..... | ..... |
| | 93K | 4 | ..... | ..... | ..... | ..... | 4 |
| | 93N | ..... | ..... | 226 | ..... | ..... | 226 |
| | 93O | ..... | ..... | ..... | ..... | ..... | ..... |
| | 103H | ..... | ..... | ..... | ..... | ..... | ..... |
| | 103I, J | ..... | ..... | 5 | 97 | ..... | ..... |
| | 103P | ..... | 15 | 42 | 47 | ..... | ..... |
| | 104A | ..... | ..... | 10 | ..... | ..... | ..... |
| Peace River..... | 94A | 14 | ..... | ..... | ..... | ..... | 14 |
| Totals..... | ..... | 1,240 | 295 | 1,016 | 275 | 609 | 3,445 |

Recreation Division

The Recreation Division is made up of three sectors—Wildlife, Water-Fish, and Recreation. Each component is involved with reconnaissance mapping and special projects as required by the Inventory Co-ordinator. However, there was shift in emphasis during 1975 in the direction of

1. Liaising more directly, not only within the Division, but also within the RAU at large in an effort to achieve more of a multi-disciplinary approach to land productivity analysis.
2. Initiating special projects, workshop, and training sessions designed to develop mapping methodologies and classification systems useful to other Governmental line agencies.
3. Introducing the Visual Resource Management System as an input to management guidelines. Although use of the system is being sponsored by the Division, its principles can be applied to other RAU disciplines. In-service training sessions were held in 1975 and will continue throughout 1976. Agencies having impact on the visual environment such as Forestry, Highways, B.C. Hydro, etc., have shown interest in its use at an applied level.

RECREATION SECTION

BACKGROUND AND OBJECTIVES

The Recreation Section is made up of two research officers and one engineering aide. Their concern lies primarily in the areas of

1. Updating CLI reconnaissance inventory data.
2. Development of guidelines leading to a manual for recreation capability mapping on a biophysical base (scheduled for completion by mid-1976).
3. Mapping features and carrying capacity within selected areas.
4. Research into more sophisticated methods of assessing carrying capacity beyond the land base and into socio-economic parameters.
5. Affecting liaison with forestry, parks, wildlife, recreation, and historical/archaeological agencies and other recreation-oriented interests within Government.
6. Development of the Visual Resource Management System and its adaptation to British Columbia.

PROJECT AREAS

Recreation features and physical carrying capacity studies were conducted during 1975 on Vancouver Island, within the Central Interior Region, East Kootenay, Omineca-Peace, and Skeena areas. The most significant of these projects include the following:

1. Recreation input to Chilliwack, Sardis, and Langley study areas for the B.C. Land Commission; May and November 1975.
2. Cathedral Lakes Park and proposed expansion area. A summary report was completed in February 1975 (*see* Resource Planning Unit description).
3. Cosens Bay area (Vernon) for the Parks Branch; report completed and submitted to the Parks Branch in November 1975.
4. Springbrook study area (East Kootenay); maps completed April 1975 (*see* Director's report).
5. A "recreation features" interview program conducted in co-operation with personnel and interested citizens in the East Kootenay area. This program will extend and update available recreation features information, with a report scheduled for completion in January 1976.
6. Designation of Environmental Protection Forests (EPF) for recreation in the Cranbrook PSYU as a part of the Computer Assisted Resource Planning program.

7. A recreation features assessment along the proposed route for the Fort Simpson-Fort Nelson Highway; completed in May 1975 and submitted to the Special Projects Unit.

8. A report on recreational resources of the Smithers study area; completed May 1975.

9. A recreation features analysis of the Bowser Lake map sheet with expected completion May 1976; of the Kispiox area completed December 1975; and of the Spatsizi Wilderness area (Spatsizi Wilderness Park), completed April 1975.

10. A high capability recreation features summary was prepared for the Terrace-Hazelton Forest Resources Study area; in this connection an interview program, as outlined in (5) above, was concurrently carried out in the Hazelton-Prince Rupert area. This program will extend and update available recreation features information, with a report to the Resource Planning Unit scheduled for completion in early 1976.

GENERAL PROGRAMS AND PROJECTS, CURRENT AND IN PROGRESS

1. A study of the *compatibility* of various forms of outdoor recreation activities with each other on a four-season basis; ongoing.

2. A critical review with comments regarding recreation input necessary to proposed folio studies to be conducted by timber companies within tree-farm licences in the Vancouver Forest District; ongoing.

3. A recreation capability assessment of proposed steel mill sites; January 1975. An estimate of requirements and costs involved in a recreation inventory in the Northeast Coal area was also carried out in late December.

4. Publication of an in-service document entitled *Landscape Architecture and the Visual Resource* was completed in September. The document has

been used within and outside the Secretariat as an introductory manual to the Visual Resource Management System.

5. A major report entitled *Spallumcheen: the Visual Environment* was initiated in mid-1975 in response to a B.C. Land Commission request. It is scheduled for publication in 1976.

WILDLIFE SECTION

BACKGROUND AND OBJECTIVES

Wildlife Section involvements within the Environment and Land Use Secretariat relate to the following five main functions:

1. To undertake basic studies on subjects related to the capability classification of lands for wildlife.

2. To participate in wildlife and related land capability surveys where necessary.

3. To serve in an advisory capacity and assist individual Governmental agencies

- interpret wildlife and related land inventory data,
- tailor their land inventory programs to facilitate a multi-disciplinary approach to resource analysis and thus minimize duplication of effort, and
- on occasion to serve in a "liaison" capacity with other agencies in the resolution of inter-resource conflicts involving the wildlife resource.

PROJECT AREAS

(a) *Land Capability for Ungulate Species*—A biophysically based land classification system for ungulate species has been developed in co-operation with the Fish and Wildlife Branch. The development of this system involved field mapping in the Smithers-Hazelton and in the East Kootenay regions. A preliminary classification manual has been prepared and will be finalized in 1976.

(b) *Springbrook Resource Study*—The Phase I portion of this study was designed to provide biophysical base information and land capability data for use by regional resource managers to assist in making resource allocation decisions. Co-ordinated by the Wildlife Section, this phase of the study was completed in April.

(c) *Range Productivity Study*—Wildlife Section personnel are presently involved in the development of a biophysically based forage productivity classification system for rangeland in British Columbia. This is being undertaken in consultation with the Fish and Wildlife Branch, Department of Agriculture, and Grazing Division, B.C. Forest Service. Major field work has been undertaken in the East Kootenay area.

(d) *Wetland Fur-bearer Classification Study*—A study to develop a biophysically based capability classification system for wetland fur-bearers is virtually complete. This study was undertaken by a post-graduate student at Simon Fraser University under the direction of the Wildlife Section and was carried out over two summer periods spent in the Smithers-Burns Lake area. A final report will be produced in 1976.

(e) *Ungulate Food Habits Study*—A research bibliography on big game food habits in the Pacific Northwest, and listing of key plant species used by big game in British Columbia has been under joint study by the Fish and Wildlife Branch and RAU Wildlife Section. A final report covering the study will be available in early 1976.

(f) *Smithers-Houston and Terrace-Kitimat Land Capability Studies*—The Wildlife Section participated in reconnaissance level inter-disciplinary studies in the above areas in 1975 as part of a program to supply land capability information to aid in regional resource planning.

(g) *Spatsizi Wilderness Conservancy and Ecological Reserve Study*—The Wildlife Section pre-

pared a generalized wildlife capability map for the Spatsizi River and adjacent areas in 1975. The Section also participated in inter-agency meetings to discuss resource conflicts and values and make land use recommendations for the area.

WATER-FISH SECTION

BACKGROUND AND OBJECTIVES

Initiated as an addition to the Recreation Division in early 1975, the Water-Fish Section reached its full staff complement of four biologists, seven technicians, and one clerical assistant by April 1975. Involvement in a number and variety of activities has taken place since that date. Primary among these has been the undertaking of a basic biophysical approach to the aquatic system within the following broad areas:

1. The development of standard *methodologies* for the inventory of aquatic systems, including the compilation and mapping of data gathered by other agencies.
2. Systematic *reconnaissance* and detailed *inventory* of various areas of British Columbia with the ultimate objective of attaining complete coverage of the Province.
3. *Analysis of aquatic systems* in special project areas by request from other Governmental agencies.

In most of the above activities, intergovernmental involvement and co-operation by resource agencies has been necessary. Among these, the Section has worked most closely with B.C. Fish and Wildlife Branch and the Fisheries Service, Environment Canada, stream biologists.

In June 1975 a branch office with one biologist and two technicians was established at Smithers, B.C. The major focus of this subsection's work

developed during the Terrace-Hazelton Forest Resources Study in late summer. The group will continue to co-ordinate water-fish inventory in

northwestern British Columbia and work with the Victoria group on standard methodologies for classification of rivers and fish populations.



PROJECT AREAS

A. The Reconnaissance Inventory is being carried out within several major drainage basins. In each case the characteristics of the biota, channel, and hydrology are being mapped and summarized in a data file. These areas have included parts of the following:

1. The Skeena-Nass drainage basin as part of the Terrace-Hazelton Forest Resources Study. Special emphasis is being placed on the Kispix River.
2. The Elk-Flathead drainage basin as part of the Southeast Coal Study.
3. The Cranbrook PSYU area as part of the computer assisted resource planning study (CARP).

B. Analyses of aquatic systems for *special study areas* have included the following:

1. The Sardis Agricultural Land Reserve review.
2. The Langley ALR review.
3. The Whistler-Blackcomb Mountain study for ski development.
4. The North Cowichan water supply study.
5. The Green Mountain Study involving hydrological aspects of snow accumulations.
6. The Nahmint integrated watershed management study involving interdisciplinary forest harvesting planning.
7. The Carnation Creek study, an interdisciplinary watershed analysis of the effects of logging within and upon an aquatic system.

C. The Water-Fish Section has participated in stream ecology courses given by the Continuing Education Department of UBC, and in October hosted a week-long workshop on inventory and mapping methods, attended by all active stream inventory personnel in British Columbia. This

workshop was helpful in consolidating the approach to stream inventory being applied in British Columbia. "In-house" workshops have also been given for Secretariat staff when time allowed.

D. Along with the development of standard methods at appropriate scales for routine inventory, the Water-Fish Section has been active in the following specific areas:

1. The use of large-scale remote sensing imagery to augment and/or replace field data.
2. The initiation and development of systems of field data collection for use by resource personnel in other Governmental departments and industry. This is carried out in co-operation with fishery management agencies.
3. The conduct of research into interpretive criteria suitable for application to basic biophysical stream data in the assessment of specific development proposals.
4. The ongoing development of a data management system for the storage and analysis of biophysical data gathered by the Water-Fish Section and other resource agencies.

Climate and Data Services Division

In co-operation with the Federal Atmospheric Environment Service it is the function of the Climate and Data Services program to collect, collate, and interpret all pertinent climate and weather data relative to the needs of Provincial resource planners and managers in long-range and day-to-day decisions on resource allocation and management in British Columbia.

The concern for integrated land use and planning in keeping with the environment brings a substantial increase in projects requiring detailed climate information; particularly in British Columbia with its complex terrain, proximity to the Pacific, and the diversity of resources. This need was reflected in the large increase in projects undertaken during 1975 by the three sections of the Division.

In addition to its basic inventory of climate, the Inventory Section undertook a major study involving climate constraints to logging and recreation as part of the Terrace-Hazleton Resource Study and developed a new Agriculture Climate Classification for Coastal British Columbia Lands, including Fraser Valley, Vancouver Island, Middle Coast, and Queen Charlottes.

The Special Services Section more than doubled the number of projects undertaken.

Key reports completed include:

- (i) Tree Fruit Microclimate Mapping in the Okanagan and Similkameen Valleys.
- (ii) Whistler/Blackcomb and White Crown Ridge-Green Mountain Ski Climate Studies.
- (iii) Meteorology and Climatology of Proposed Georgia Strait Ferry Terminal Sites.
- (iv) Climate Suitability for Recreation Classification.
- (v) Computer Modelling of Climate for Lodgepole Pine and Douglas Fir Provenances.

Data Services was faced with the sharpest increase in work load resulting from demands for computer applications, data banks, and statistics. Four staff were added from other sections to Data Services late in 1975 to partially offset increased work load.

A systematic study of map production and distribution was undertaken by Data Services prior to introducing some facets of computing and microfilming systems within the Geographic Division.

It is expected that the arrival of the new Honeywell Computer and substantial demand for computer-based data systems will add to the present burden of Data Services.

As Chairman of the ELUC Computer and Data Services Committee, the Division Chief led a team of representatives from Transport and Communications, Forest Service, and ELUC Secretariat to a number of Canadian and American centres to review a wide variety of geo-information and auto-cartographic systems with direct application to resource planning and management. A library of information systems has been created for inter-departmental use.

Considerable further effort is required to develop departmental data bases and systems so that inter-resource questions can be satisfactorily answered. Other key activities completed by the Committee were an Inventory of Resource Data Files within the ELUC member departments, recommendations on the use of Universal Transverse Mercator Rectangular Grid for geo-referencing resource data, and increasing map production within Surveys and Mapping Branch.

Division staff participated in a large number of intersector, interdepartmental meetings, and projects.

Section reports follow.

CLIMATE INVENTORY SECTION

The Climate Inventory Section maintains meso-scale networks of climate stations in select areas and plays a co-ordinating role in all climate observations throughout the Province. The networks are designed to complement the macro-scale networks of the Canadian Atmospheric Environment Service and other agencies, so that both regional and local variations in climate can be incorporated in land planning and management decisions. Basic data on temperature, precipitation, snow-pack depths and water contents, wind velocity and direction, humidity, soil temperature, and solar radiation are collected as appropriate for interpretative support for forestry, agriculture, wildlife, and recreation capabilities as well as for resource decisions concerning development, engineering design, location of facilities, and management. Major networks in operation during

1975 included the Northwest, Omineca-Williston, Columbia-McBride, Lillooet, and South Coast Vancouver Island regions as shown in Figure 1. Air temperature and other weather elements were measured at a total of 300 stations, and precipitation alone was measured at another 630 stations (additional stations are listed under Special Services). At the end of the year the regular operations were concluded on schedule in the Columbia-McBride, Lillooet, and South Coast Vancouver Island networks. The Northwest network was decreased considerably in area as the result of budgetary limitations. New networks have been planned for 1976 operating in the Queen Charlotte Islands and the Lower Middle Coast areas. In addition to the networks operations, a special mobile unit was used to compare energy and water consumption of fertilized and unfertilized range-land grasses in the Kamloops areas.



Interpretative maps of Climate Capability for Agriculture were produced at a scale of 1:125,000 for 93F/SE and parts of 93N, O, 94B, C, 82K in the Prince George and Williston Reservoir and West and East Kootenay areas. Maps of the dry-land agricultural climate ratings for mapsheets 82L/NW/SW, 92I/NE/SE, in the Kamloops area have been started. Noteworthy reports included:

1. An Agricultural Climate Capability Classification for Coastal Areas of British Columbia.

2. Climate Constraints to Logging and Climatic Suitability for Recreation in the Terrace-Hazelton Forest Resources Study Area.

3. Proposed Climate Network for Northwest British Columbia.

4. A Proposal for Additional Solar and Net Radiation Measurements in British Columbia.

5. Climatological Instrument and Site Standards in British Columbia.

*Table 3—Number of Requests by Departments**

| | Instrumentation | Data Summaries | Interpretations and Reports |
|--|-----------------|----------------|-----------------------------|
| Forest Service..... | 16 | 7 | 26 |
| Lands Service..... | 6 | 3 | 3 |
| Water Resources..... | ..... | 2 | 3 |
| Municipal Affairs..... | ..... | 2 | 3 |
| Recreation and Conservation (Parks)..... | 15 | 6 | 10 |
| Fish and Wildlife..... | 34 | 7 | 3 |
| Public Works..... | ..... | 2 | 3 |
| Agriculture..... | 49 | 14 | 27 |
| Land Commission..... | ..... | ..... | 5 |
| B.C. Hydro..... | 5 | ..... | 4 |
| Internal and other†..... | 12 | 15 | 50 |
| Totals..... | 137 | 58 | 137 |

* Does not include verbal requests.

† Secretariat, Federal Government, Regional Districts, University, Public.

SPECIAL SERVICES SECTION

Special Services provides meteorologist/climatologist support for Provincial studies which have a specific need for tailored weather/climate such as smelter, ski hill, nursery, terminal site selection, Agriculture Land Reserve appeals, local development proposals, and program management support.

Requests for instrumentation, data summaries, and interpretation are reflected in Table 3 and some of the project reports listed. A doubling of projects undertaken occurred in 1975, but work load was offset by the addition of two meteorologists.

List of Major Reports/Projects for Special Services Section 1975

1. Whistler/Blackcomb Ski Climate Study.
2. Whitecrown Ridge/Green Mountain Ski Climate Study.
3. Meteorology and Climatology Study of Proposed Georgia Strait Ferry Terminal Sites.
4. Climate of Gulf Islands (for Gulf Island Trust).
5. Microclimate and Frost Risk Mapping of Okanagan Valley (DATE Project).
6. Wind Machine Evaluation for Frost Protection (DATE Project).
7. Wind Climatology of MacMillan Park Region of Cameron Valley with Reference to Possible Wind Damage (for Parks Branch).
8. Remote Sensing of Frost Pockets in Glenmore Valley Area of Kelowna.
9. Climate Suitability for Recreation Classification Scheme Developed.
10. Minimum Temperature Patterns in the Smithers Region.
11. Site Assessments of Various Potential Steel Mill Locations.
12. Air Quality Study of Langley Area.
13. Spillimacheen Project—Climate Description and Map of Climate Suitability for Recreation.
14. Computer Modelling of Climate Information for Lodgepole Pine Provenances and Douglas Fir Provenances.
15. Biogeoclimatic Zonations in the Cariboo Area for British Columbia Forest Service.

DATA SERVICES SECTION

The Data Services Section provides continuing data reduction, summarization, storage, and analyses for the soils, vegetation, and Climate Inventory Sections of the Resource Analysis Unit. It also provides support in the form of numerical and statistical advice and computer programming to all of the ELUC Secretariat sections and computer support for interpretations and numerical modelling for the Climate Special Services Section.

Soils, vegetation, and climate data banks are maintained. Historical climate data for use in interpretations have been acquired from the Federal Department of the Environment.

The increased work load this year has necessitated transferring staff to the section from the Climate Inventory Section and Geographic Division. Training for these personnel plus training for the new Honeywell Computing Facility has been initiated and is ongoing.

Requests for data summaries have increased as the data banks increase in volume and other Government departments, such as Agriculture, Forest Service, Recreation and Conservation, become aware of the data bases.

Geographic Division

The Geographic Division provides geographic research and technical support for the ELUC Secretariat. The Division's work in applied geography includes mapping such distributions as present land use, land status, population distribution, and communication facilities. The research analysis and interpretation is oriented toward specific regional studies and projects. On the technical side, the Division continues to provide a central cartographic service for the whole Secretariat, and maintains a central Map Library for public information and display.

The work of this Division is illustrated by select examples from each of the three Sections—Resource Geography, Draughting, and Map Information. The examples shown are representative of the work of this Division, but are by no means the whole story. Further details can be found in the *Annual List of Available Publications*, from project reports, and by personal inquiry.

RESOURCE GEOGRAPHY SECTION

The three Research Officers in the Resource Geography Section have brought their various talents and disciplinary backgrounds to a variety of projects, usually on a co-operative basis with other agencies. They have been ably assisted by the technical staff within the Division, and by personnel from other divisions and departments. In addition, the Technical Co-ordinator and Division Chief have collaborated directly on a number of the projects involving the Section. Among the projects are:

(1) *The B.C. Ferries Study*—The Study was directed by the Special Projects Unit, with the Geographic Division involved identifying major resource, land use, socio-economic, and planning issues in the immediate vicinities of the existing and proposed ferry terminal sites. The regional implications of alternative ferry policies on recreation and tourism, public convenience, and devel-

opment pressures were then investigated; management strategies for terminal design and access, vessel deployment, and capital expenditure were reviewed, and estimates of operating costs and revenues of alternate routes and fares were made. The Study Report is currently in the final stages of preparation.

(2) *Integrated field programs*—Traditionally, Resource Departments have undertaken independent resource inventories. To make the most efficient use of inventory personnel, to support Provincial natural resource planning and management, there was a need to co-ordinate and integrate various departmental inventories and mapping functions. Two meetings of the interdepartmental working group were held in April and September; the results to date included:

(a) *Field areas*—Summer 1975 saw the production of a set of indices showing the field programs of each department or branch; 750 copies were printed and circulated to Provincial and Federal Resource Departments and Universities. Departments have submitted their tentative 1976 Field Programs for discussion in the spring.

(b) *Base maps*—The adoption of the key standard scales of 1:20,000 and 1:50,000 for resource mapping has meant that Surveys and Mapping (Lands Service) can now concentrate their work on 1:20,000 base maps as the Federal Government is responsible for those at a scale of 1:50,000.

(c) *Air photography*—Most of the inventory programs require air photography; in most instances, existing photography will suffice, but in some it is necessary to arrange for new photography. A start has been made in identifying the requirements for next year.

Co-ordination of field inventory has direct benefits in saving both money and staff time. How-

ever, this increased efficiency in field operations is of little value unless data delivery and presentation techniques can be improved.

(3) *Geographic Information Systems*—The Technical Co-ordinator represents the Division in the interdepartmental review of automated cartography and microfilm/fiche systems, delivery, and presentation. To date, a number of systems in Canada and the United States have been examined.

The present Division map library is to be transferred to microfilm with a computerized indexing system. This move will ease current problems of security of originals, storage, retrieval, duplication, update, and distribution.

In conjunction with ELUC Computer and Data Services Committee and Climate and Data Services Division, a number of alternatives have been determined for automating all or parts of current map production. These innovations introduce flexibility of output relative to the demands of integrated resource planners and managers. The current manual draughting system is not suited to the increasingly complex questions being asked by Resource Managers through folio management and CARP (Computer Assisted Resource Planning).

The Division has been represented on the interdepartmental review of the Standard System of Mapping for British Columbia. It is recognized that the integration of the Universal Transverse Mercator (UTM) geo-referencing system with standard map scales is an important requisite in the use of mapped data and the implementation of automated cartography and geographic information systems.

DRAUGHTING SECTION

The Draughting Section is broken down into three draughting teams. The Inventory Projects team

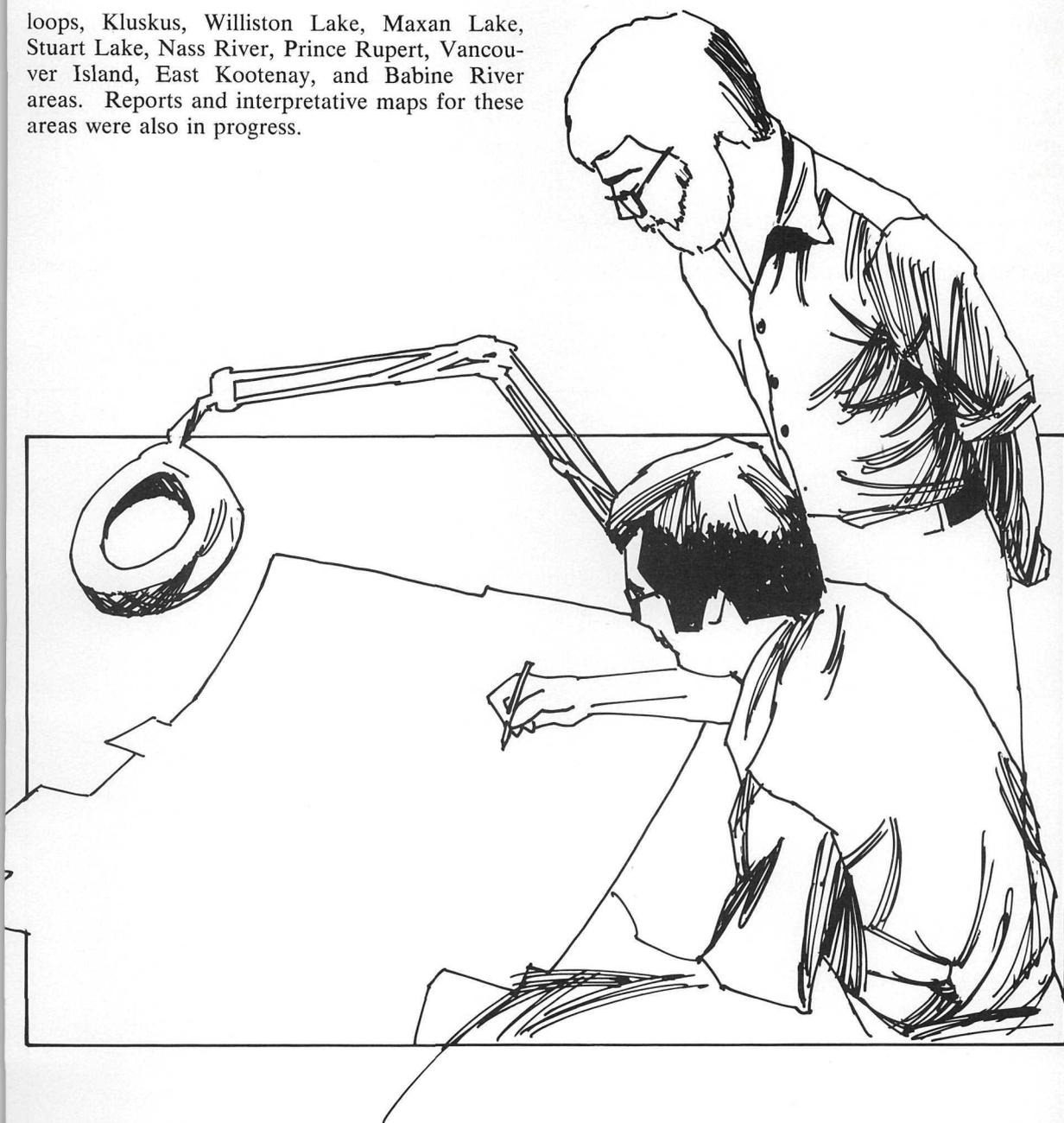
produces final draughts of soil, landforms, vegetation, climate, and hydrology maps, as well as any interpretative maps prepared from these five bases; the Springbrook Biophysical Study is an example of an inventory project. The Analysis Project team is involved with longer-term projects such as the Williston Study. The Kelowna Field Office, which was augmented in 1975 by the addition of a senior Technical Assistant, is mainly concerned with preliminary biophysical mapping.

(1) *The Springbrook Biophysical Study*—A wide array of resource capability maps was prepared and placed in a resource folio of the study unit. The folio consisted of 26 overlays and was presented in Cranbrook to Government agencies and resource users in April 1975.

(2) *The Williston Reservoir Potentials Study*—Resource potentials in and around the Williston Reservoir were assessed in order to permit integrated resource management in the area immediately surrounding the reservoir. Approximately 30 maps are currently being finalized, and portray information on hydrology, water quality, forestry, reservoir clean-up, recreation, fisheries, wildlife, land status, land capability, and mineral potential. The maps were prepared by a study team consisting of representatives from several Government agencies (*see* Special Projects Unit Description).

(3) *The Kelowna Field Office*—In Kelowna a close link exists between the technical assistants and the Land Inventory Division staff. The pedologists, foresters, ecologists, and agriculturists gather the data while the technical staff undertakes the preliminary draughting. The three-man office provides preliminary soils, landforms, and vegetation maps for finalization in the Victoria office for use on special projects and inclusion in the central Map Library. In 1975, field work was completed and inventory mapping was begun for the West Kootenay, North Thompson, Kam-

loops, Kluskus, Williston Lake, Maxan Lake, Stuart Lake, Nass River, Prince Rupert, Vancouver Island, East Kootenay, and Babine River areas. Reports and interpretative maps for these areas were also in progress.



MAP INFORMATION SECTION

Maps and publications arising from Secretariat projects are stored in the Resource Analysis Unit Map Library. The library consists of approximately 20,000 maps, many of which are reproducible and are available as manuscript maps. Multiple copies of Canada Land Inventory (CLI) published maps and reports are also available; to date, 122 CLI maps have been published in British Columbia. Preliminary manuscripts and finalized maps are listed in the *Annual List of*

Available Publications, obtainable from the *Map Librarian, Resource Analysis Unit, ELUC Secretariat, Parliament Buildings, Victoria, B.C. V8V 1X4*. The Map Information Section staff provides guidance on the interpretation of the maps as well as assistance in printing, publication, and distribution of reports (*see table below*). They also co-ordinate requests from other departments or divisions to receive relevant base maps and air photographs.

Summary Table for Map Distribution

| Agency | White Prints |
|--|--------------|
| ELUC Secretariat | 4,508 |
| Other Government departments (including municipalities and regional districts) | 3,266 |
| Educational institutes | 1,774 |
| Companies and consultants | 1,592 |
| Public | 484 |
| Total | 11,624 |



Administration

Personnel Services

The Personnel Office provides services to the Water Resources Service and the Lands Service as well as the ELUC Secretariat.

ESTABLISHMENT, RECRUITMENTS, AND RECLASSIFICATIONS

The ELUC Secretariat had 81 established positions filled at the end of the year, with nine vacancies for a total complement of 90 established positions (Table 4). In addition there were 41 temporary continuous and six temporary auxiliary employees on staff for a total of 128 employees. The Secretariat recruited and filled 34 positions in 1975 compared to 24 new positions in 1974, almost all of these positions being filled prior to the Government-imposed restrictions on hiring.

The number of short-term and summer appointments was also increased over 1974 due to increased funding under the Work in Government (WIG) Program. Over the year, 64 such positions were filled compared to 53 in 1974. A substantial increase in reclassifications occurred during 1975, 34 positions being reclassified compared to four positions in 1974. A major reason for this increase was the implementation of a new Technical Assistant Series; as a result, many draughtsmen and mapping assistants were reclassified to higher levels in the Technical Assistant Series.

LABOUR RELATIONS

The Government signed its first contract with the British Columbia Government Professional Employees' Association on June 20, 1975. As this contract covers a number of the Secretariat's employees, much of the Director's time was spent in providing management input into these negotiations. Separate component negotiations covering salaries for geologists, foresters, and agricul-

turists also occupied staff time and as of the year-end agreement with the agriculturists had not been reached.

The second master contract with the British Columbia Government Employees' Union, the union representing the majority of Secretariat employees, was signed on November 14, 1975. Only a limited amount of this office's time was devoted to this contract, but it has become very much involved in developing greater departmental involvement in component negotiations at the line level.

TURNOVER, SICK LEAVE, AND PROMOTIONS

Although there was a small increase in turnover in 1975, the Secretariat rate of 10.5 percent is still well below the average for the Provincial Government of 17 percent. Similarly, the average sick leave rate of 3 percent for the Secretariat continues below the Government-wide average of 4.5 percent (1974 figure). Under the master contracts signed with the major employee unions, a portion of the unused sick leave is payable upon retirement.

The principal promotions within the Secretariat during 1975 occurred within the Resource Analysis Unit. Dr. A. N. Boydell was appointed Chief, Surficial Geology and Soils Division; T. W. Chamberlin became Supervisor of the Water-Fish Section; Dr. R. G. Wilson was appointed Supervisor of the Climatology Section, and W. G. Yeomans became Chief of the Recreation Division.

R. H. Reid of the Geographic Division successfully completed a correspondence course in Public Administration. Additionally, employees received sponsorship on 24 courses that would assist them in developing skills and increase their potential within the B.C. Government.

Table 4—Secretariat Establishment by Units

| | Established Positions | Established Positions Filled | Temporary Contracts | Temporary Auxiliaries | Total | Vacant |
|---|-----------------------|------------------------------|---------------------|-----------------------|-------|--|
| Executive Offices and Administration..... | 9 | 8 | 2 | 2 | 10 | 1 Clerk-Stenographer 4 |
| Resource Planning | 8 | 7 | 2 | 1 | 10 | 1 P.O. |
| Special Projects | 8 | 5 | --- | 1 | 6 | 1 Clerk-Stenographer 2 2 1 R.O. 1 Economist 2 |
| Resource Analysis Unit— | | | | | | |
| Land Inventory..... | 14 | 13 | --- | 2 | 15 | 1 Agriculturist 3 |
| Soils and Surficial Geology | 5 | 4 | 5 | --- | 9 | 1 Agriculturist 3 |
| Recreation..... | 8 | 7 | 13 | --- | 20 | 1 Biologist 3 |
| Climate and Data Services... | 20 | 19 | 9 | 2 | 30 | 1 R.O. 5 |
| Geographic..... | 18 | 18 | 10 | --- | 28 | |
| Totals..... | 90 | 81 | 41 | 6 | 128 | 9 vacancies |

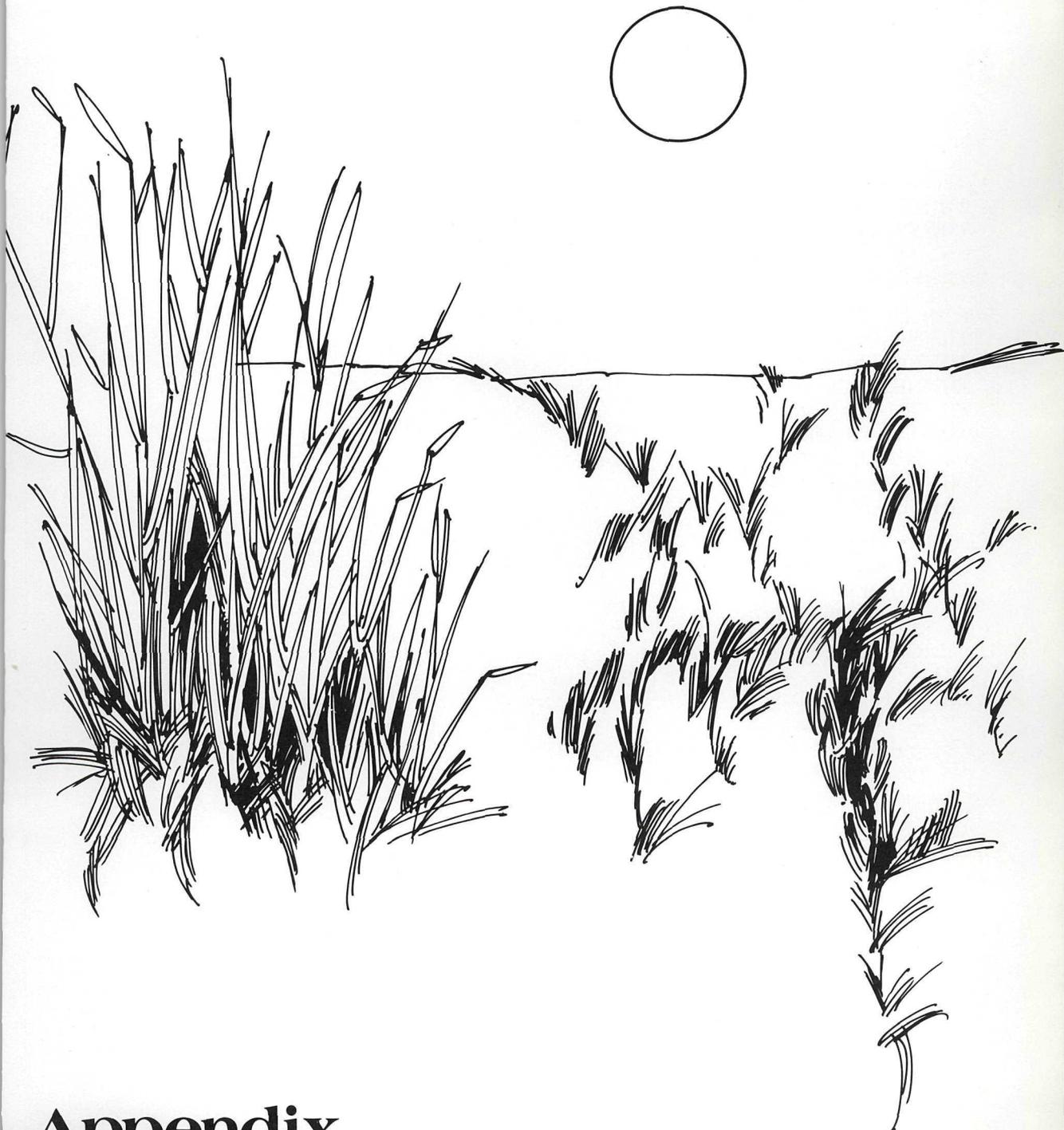
Accounting Division

This Division provides accounting services for the Lands Service and Water Resources Service as well as the ELUC Secretariat. These services include assistance with the preparation of estimates, budgetary control, the preparation and distribution of payroll data, the processing of accounts payable and purchase requisitions, and the preparation of reports and summaries for other Provincial and Federal Government departments.

Because of staff turnover, increased expenditure, and numerous complexities and adjustments arising from the collective bargaining process it has been a very busy year for the payroll and accounts payable sections. Serious delays in payments, which occurred during the year, were somewhat alleviated in October when this department was permitted to add one temporary employee to each section. The staff additions also made it possible to focus more attention on expenditure control.

Statement of Expenditure for the Calendar Year 1975

| | \$ |
|--|-------------------------|
| Executive Offices and Administration } Resource Planning Unit } Special Projects Unit } Resource Analysis Unit— | 1,097,583 |
| | \$ |
| Land Inventory | 366,597 |
| Soils and Surficial Geology | 219,480 |
| Recreation Division | 501,681 |
| Climate and Data | 644,999 |
| Geographic | 373,693 |
| | <u>2,106,450</u> |
| Total | <u><u>3,204,033</u></u> |



Appendix

New Publications 1975

*Land Capability Maps**

Agriculture (1:125,000)

- 93J/SE—Salmon River
- 93K/SW—Burns Lake
- 93L/NE—Fulton River
- 93L/SE—Houston

Forestry (1:125,000)

- 93F/NE—Tachick Lake
- 93K/SW—Burns Lake
- 93L/NE—Fulton River
- 93L/SE—Houston
- 93M/SW—Hazelton
- 94A/NE—Rose Prairie
- 94B/NE—Halfway River
- 94H/SE—Big Arrow Creek

Recreation (1:125,000)

- 93E—Nootka Sound
- 92F—Alberni
- 93I—Monkman Pass

Ungulates (1:250,000)

- 82G—Ferne
- 92L-102I—Alert Bay
- 92O—Taseko Lakes
- 93H—McBride
- 93L—Smithers

Waterfowl (1:250,000)

- 92E—Nootka Sound
- 92H—Hope
- 92I—Ashcroft
- 92J—Pemberton
- 92K—Bute Inlet
- 93A—Quesnel Lake

* Published by the Lands Directorate, Department of the Environment, Ottawa.

Reports

- BLOCK, H. J., *et al.* Recreation Capability Inventory—A Preliminary Description for Reconnaissance Inventory of Outdoor Recreation Features and Physical Carrying Capacity for Outdoor Recreation, 19 pp., 1975 (2nd preliminary edition).
- BLOCK, H. J., and FALLS, R. W. Recreational Resources of the Smithers Area, 40 pp, 2 maps, 1975.
- ENVIRONMENT AND LAND USE COMMITTEE. Resource and Environmental Planning in British Columbia, 16 pp, 1975.
- ENVIRONMENT AND LAND USE COMMITTEE SECRETARIAT. Annual Report, 1974, 63 pp, 7 maps, 1975.
- HAWES, R. A. A Landscape Approach Useful to Regional Land Use Planning, 1969, 200 pp, 77 plates, 1 map, 1975.
- JOHNSTON ASSOCIATES. MacKenzie Market Study, 70 pp, 30 tables, 9 figures, 1975.
- LORD, T. M., and GREEN, A. J. Soils of the Tulameen Area of British Columbia, British Columbia Soil Survey Report #13, 163 pp, 5 tables, 18 figures, 1 map, Ottawa, 1974.
- PAISH, L. H., *et al.* Tsitika-Schoen Resources Study Summary Report, 42 pp, 2 maps, 1975.
- TRAVERS, O. R. Cathedral Provincial Park Expansion Proposal: Impact Evaluation, 60 pp, 12 maps, 3 graphs, 1975.
- YEOMANS, W. C. Landscape Architecture and the Visual Resource, 28 pp, 1975.

