

**RECREATION**  
in the  
**COLUMBIA RIVER BASIN**  
of Canada

*A Multiple Use Proposal*

*By*

**THE WEST KOOTENAY ASSOCIATION  
OF ROD AND GUN CLUBS, MAY, 1961**

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## *. . . the worth of the land*

**T**HE true British Columbian is the man who has struck a deal with the face of his land and everything that lives and moves and has its being thereon.

It is popular to believe that men of great daring and determination and instinctive drive to improve the lot of themselves and others, have challenged the wilderness and wrested from it the collection of wealth that makes up our province today.

The simple truth, however—and it has been apparent for those who wanted to see from the beginning—is that the prosperity of British Columbia and the weal of its people, lie in co-operation with the wilderness and not in its destruction.

The land will give up trees forever, if trees are farmed. Its lakes and streams will glisten and run to eternity, its fish and birds and game will multiply and abound, if a conscious effort is made to draw near to the resource and come to terms with it.

Industry does this with its microscopes, its spectroscopes and its computers every day: it has to if it is to survive. It has to make a conscious effort to co-operate with the land, for if it fights the land, the land will die.

This document is a conscious effort, by men of conscience, incidentally, to draw near to and team up with a part of the land, before the fight begins.

Its authors confess quite frankly that they do not know precisely what the land expects of them now, but their recommendations will indicate, to the discerning, that the land does expect them to find out.

About 200,000 Kootenaians directly, and almost 2,000,000 British Columbians indirectly, expect them to find out, too.

In this brief, the authors explore, on the instructions of the West Kootenay Association of Rod and Gun Clubs and as far as resources permitted, the deal that must be struck between the people of this province and the Canadian section of the great Columbia River basin.

The authors are not politicians and they do not concern themselves with the political implications of this or that phase of the Columbia development treaty. Neither are they concerned with the viewpoints of local and special interests.

Instead, they have asked themselves some questions, for the secret to the

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## *the worth of the land . . .*

maximal utilization for the greatest good to the greatest number, lies nowhere if not in the inquiring mind.

What is the Columbia basin in Canada?

What is the face of the land now, and what will it be shortly after treaty ratification?

What is the nature of the resource, the total Columbia basin resource, and what is to be destroyed and what created?

What will be the potential, after dam construction has begun?

Who is to count what we have now, and who is to invest so that the land prospers and its product becomes bountiful?

How can we provide so as to meet the needs of the tourist, the angler, the hunter, the boatsman, the plain watcher and the simple wanderer, who find in our wilderness the physical and mental restoratives they seek?

The Columbia Development Committee of the West Kootenay Association of Rod and Gun Clubs have given some of the answers, too. They have drawn on the experience of others; they have collected and collated profound analyses of the somewhat inexact science of conservation, its purpose and its meaning; they have illustrated and applied to the Columbia basin the declared viewpoints of British Columbia government and scientific authorities.

All of this they have prepared specifically for presentation, as from non-partisan but intensely alerted conservationists in the name of British Columbians at large, before a public hearing which is to be held by the provincial water rights controller when an application for permission to engage in Columbia basin development is filed. This application, to be made by the B.C. Power Commission, cannot long be delayed, for the commission has been at work at two of the damsites for some time.

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The West Kootenay Association of Rod and Gun Clubs has the simplest of objectives. It wants government to co-operate with the land so that hydro energy, fish, wild fowl, game large and small, forests, rivers, lakes, streams and all manner of men and their progeny to the final generation, can exist together in beauty and harmony and usefulness of purpose.

In this document, this conscious effort, it merely asks an application of the principles of multiple land use, so that the land and its people and their culture can grow side by side. It demands the support of every British Columbian who feels the true worth of his land.

DENNIS A. WILLIAMS

Trail, B.C.  
May, 1961.

# CONSERVATION

of the

## CANADIAN COLUMBIA BASIN RECREATIONAL RESOURCE

### A MULTIPLE USE PROPOSAL

of the

Columbia River Committee

of the

West Kootenay Rod  
and Gun Clubs Association

to the Annual Convention

of the

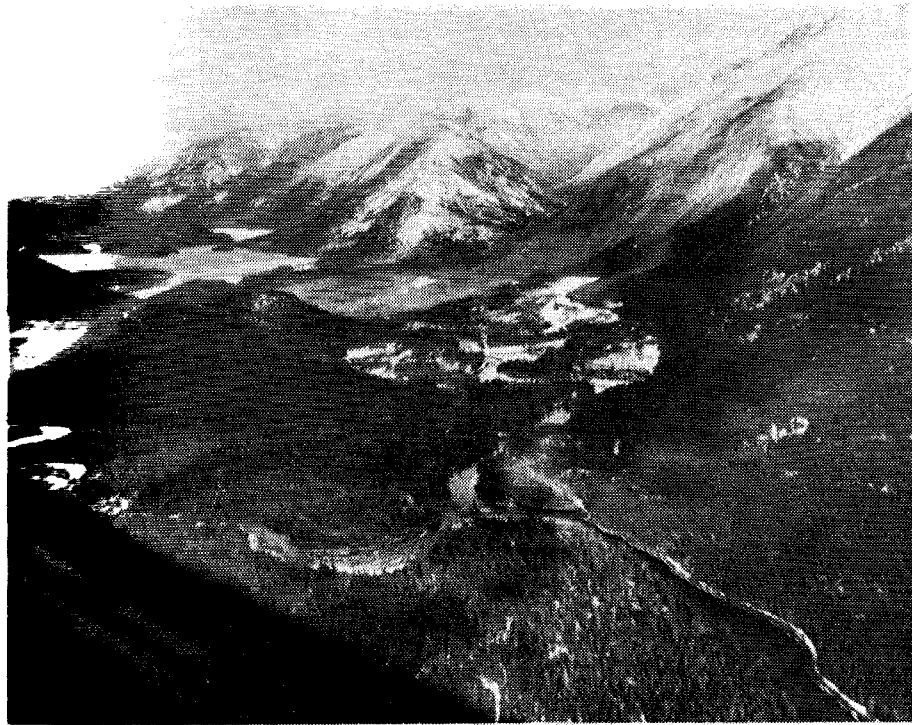
B.C. Federation of  
Fish and Game Clubs

AT PENTICTON, B. C., ON MAY 4, 5 and 6, 1961

## *. . . the terms of reference*

This brief was prepared as directed by the November 20, 1960, quarterly meeting of the Association, in the following motion:

**"BE IT RESOLVED that the Association executive and the Columbia River Committee be empowered to prepare a brief of type content such as outlined; and that such brief be presented to any appropriate public hearing called on the Columbia Basin water power and storage proposals and/or to the appropriate Ministers of the British Columbia and Canadian Governments."**



**PROPOSED DAMSITE** on Duncan Lake lies in about the centre of this photograph, a short distance above confluence of the Lardeau (left) and Duncan (right) Rivers. The Duncan flows south (right) into the waters of the Main Kootenay Lake. (All photographs by Pat Archibald, Trail.)

**ABOUT 4,500 ACRES** of Duncan Lake water fowl habitat are in line for inundation if Columbia River basin develops as anticipated by the international treaty. Here is an excellent picture of Duncan marshes (referred to on Page 18 from the air.



## A.—THE PRINCIPLE



A SIMPLE positive statement of this principle might be as follows:

**“Any natural resource should be managed to provide maximum possible benefits to the greatest number of people.”**

Similarly for a negative statement:

**“A natural resource should not be restricted to one use to the detriment of other possible uses and thereby the overall detriment of people at large.”**

That this principle is recognized by the present British Columbia Government is evidenced by the following statement by the **Hon. R. G. Williston** (Reference 1): “There is a growing concept towards the multiple use principle - we are moving steadily in the right direction.” Mr. Williston’s comments were with respect to the multiple use of the forests in B. C. and are equally applicable to the use of water or any other of our natural resources.

As further support of this principle, a quotation from **Dr. Ian McTaggart Cowan** follows (Reference 2): “One of the greatest social problems facing us today is designing multiple programs of natural resource management that will yield for every person the highest

## *... multiple use of our natural resources*

standard of living while at the same time preserving the resource base on which the living standard depends.”

Thus our primary concern in the case of the Columbia Basin water power and storage proposals is with **the use of water** and our secondary concern with the use of the land associated with that water.

The water resource can provide:

- power
- irrigation water
- drinking water
- water for sanitation
- a fishery—commercial and/or sport
- recreation—boating, swimming and allied pursuits.

The land associated with it can be used for:

- agriculture
- forestry
- residence—year-round and summer
- recreation—parks, campsites, beaches, harbors, game management.

## *reservoirs for recreation . . .*

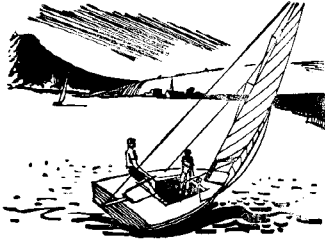
These are based on the principle of multiple use of our natural resources as applicable to the Columbia Basin proposals. They encompass the propositions that:

(1) Power and storage dam reservoirs be recog-



nized as potential recreation areas and developed as such.

(2) Losses or deleterious results arising from changes in use of a natural resource be, if possible, corrected and failing correction be compensated for.



## ... making the mature man

1. **Recreation** - a fundamental requirement of society.

This theme is presented daily - to be read in the newspapers, heard on the radio, seen on television - in support of the activities and as a basic factor in the programs relating to

- mental health
- public health
- organized public recreation societies
- correctional institutions
- government departments in these fields

Recreation is presented as the primary answer to the challenges of

- the shorter work week
- automation
- earlier retirement

Comment and opinion on this subject is so widespread that it does not require documentation here, merely statement and recognition are needed.

Finally, to note British Columbia Government opinion as voiced by a senior civil servant, **Deputy Minister D. B. Turner** (Reference 3):

"Recreation plays a vital part in the maturing of a balanced or well rounded individual. It is true that we must first clothe, shelter, and feed ourselves but that is done within eight hours of the twenty-four. As we need the primary resources to occupy our attention during our labor hours, however, so do we need our primary resources for them to satisfy our leisure hours. In using our resources fully we realize an integrated life. The keenest pleasures, the greatest moments of physical and mental exercise, the most enjoyable periods of observation and meditation, come to many of or most of us when in direct touch with the resources of nature. Reference may be made to gardening, hiking, skiing, hunting, angling, boating, photographing, collecting, nature-watching, or other outdoor activity."

2. **Improvement** - reservoirs provide a unique opportunity for improvement of our recreational resource and facilities.

3. **Economic value** - reservoirs have a great economic value when developed for recreation.

4. **The T.V.A. example.** The T.V.A. experience supports 2 and 3 above (Reference 4).

(a) "The Tennessee Valley has always been a land of abundant natural resources for recreation. Its mountains are the highest east of the Mississippi. Its forests are of varied types, widespread and naturally luxuriant. Its streams and woods offer fish and game in both variety and abundance. Its climate

is favourable to outdoor recreation most of the year. Add to these the cultural and historic features of interest to tourists and vacationists, and the result is a combination of resources which establishes the area by nature as a resort region, in the same sense that New England is a resort region or the Lake states."

**The favourable comparison for B. C. generally and the Columbia Basin specifically is most obvious.**

(b) "Twenty years ago (1933) when T.V.A. started out, these facts were very little known by people outside the region and very little recognized by people within it. Such occasional tourists as might be discovered in the Valley normally came either because they had lost their way or because there was no convenient way to avoid driving through enroute to Florida or the Southwest. Further, those who did come did not tarry long, for there were few accommodations and there was little to do if they should stay over. Local residents and tourists eyed each other with mutual suspicion, not to say distrust; for the former were reluctant hosts and the latter unwilling guests.

"Now tourists are no longer strangers in the valley."

This last sentence is an understatement of an amazing growth as the following quotations show.

(c) "In 1941, the State of Tennessee sold something like 13,000 non-resident fishing licenses; ten years later it sold 190,000."

(d) "During the same period, the boat docks and fishing camps on T.V.A. lakes multiplied by four, increasing from 50 to 200."

(e) "State Park attendance for the four states—Alabama, Kentucky, North Carolina and Tennessee—increased from 1,152,000 in 1941 to 8,536,000 in 1953.

(f) "Since World War II, visitors to T.V.A. dams and lakes have increased from 10,000,000 to nearly 30,000,000 a year." (Note this period was 1946 to 1953.)

(g) "Motels and tourist courts in Tennessee nearly doubled in the period between 1947 and 1952, increasing from 428 to 801; they represent an investment of over \$20,000,000."

(h) "Recreation and travel expenditures have become **an important factor in the region's economy**; they rank third, after manufacturing and agriculture."

5. **The T.V.A. example - the result of planning** (Reference 4).

(a) "Even before its headquarters were set up in Knoxville, T.V.A. had started to collect facts about

## *. . . making the mature man*

the recreation features of the Valley. By 1934, T.V.A. personnel in Washington, D.C., had compiled a very extensive file of correspondence with various local people in the Valley. This file contained facts about the location of parks, monuments, caves, waterfalls, springs, and other scenic features. By 1934 also, T.V.A. had hired a small staff, headquartered in Knoxville, to continue this job systematically: it was charged with responsibility for making inventories of the attractions of the region and laying out the broad outlines of planning, promotion, and development measures for recreation resource development. The results of these early studies are summarized in two reports, *The Scenic Resources of the Tennessee Valley and Recreation Development of the Southern Highlands Region*. These reports preceded by several years somewhat similar studies undertaken by the National Park Service under authority of the Park, Parkway and Recreation Area Study Act of 1936. As pioneering studies, they did much to establish the concept of scenic and recreation resources in the minds of the Valley people, many of whom came to see that their beloved mountains could perhaps give them a **better living** as scenery than as cornfields."

(b) "In 1937, T.V.A. turned its attention to detailed recreation studies of each new reservoir added in its river development program. While concrete was still being poured at the dams, recreation technicians were out exploring the future shorelines of the reservoirs to be. Certain questions of physical fact had to be answered. While land was still pasture or woodland or crops, surveys were made to determine what locations might make suitable boat harbours, bathing beaches, fishing camps. How warm would the water be? Would it be polluted? Would it offer good fishing? How much would levels be raised or lowered? As a result of these studies, T.V.A.'s recreation staff ended up with a whole bookshelf of reports. Reservoir by reservoir, the reports set forth in detail the recreation potential."

## *resources do not stand alone . . .*

1. If a comprehensive multiple use program is to be entered into and brought to fruition, **it must be based upon the principles of conservation.**

"What Is Conservation?" (Reference 6)

"Conservation is the intelligent management of all benefits bestowed upon us by nature and the protection and preservation of all those benefits, so that while yielding a maximum pleasure and profit today, they will remain inviolate as a heritage for the future."

(c) The same reference goes on to note that administrative controls for the use of the reservoirs and adjoining lands were necessary, planned for, and put into operation for:

- public recreation use - parks  
- wildlife areas
- private recreation use - zoning  
- subdivision controls
- health and sanitary regulations
- other features of development

(d) The building of T.V.A. (Reference 5) frequently notes two items born of planning that have added much to the recreational value of these developments:

✓ the main architectural features and outline of each dam were to be in harmony with its surroundings.

✓ construction facilities were planned for conversion to maintenance and recreation facilities upon completion of construction.

(e) Reference 4 states: "Of the ten federal reservoirs receiving more than 1,000,000 person-day visits in 1952, seven are in the T.V.A. system. (The others are Grand Coulee, Lake Mead, and Lake Texhoma.)"

This statement is a further proof that a **large dam of itself is a considerable tourist attraction**. Grand Coulee, in particular, shows this since there is certainly nothing else to attract people to such a forbidding area.

If, however, one looks further, surely one of the reasons the T.V.A. dams show seven out of 10 in this class, is the fact that the surroundings of the T.V.A. dams have made it possible to develop the facilities that not only attract the visitor but also make it personally desirable for him to stay for some number of days.

Once again the comparison speaks well for the Columbia Basin in Canada.

### D.—MAIN REQUIREMENTS



"The Objective of Conservation" (Reference 7)

"...is to manage the natural resources so they will endure and continue to support our civilization."

To quote Dr. Turner again (Reference 3):

"Conservation does not oppose waste but advocates it. The only restriction is that an eye must be kept to the future as well as to the present.

"The fundamental principles of conservation are these:

## *. . . resources do not stand alone*

- our natural resources cannot be considered apart;
- conservation is based upon accurately determined knowledge;
- the handling of renewable resources must be co-ordinated;
- scientific planning and management are the bases of our maintenance of resources;
- conservation means co-operation;
- conservation must be practiced."

### 2. Recreation Potential

—must be determined for the whole of the Columbia Basin in Canada and for each individual reservoir by:

(a) **An inventory** of present and potential recreational features such as - historic sites, monuments, caves, waterfalls, hot springs, wildlife, viewing stations of such as fish spawning areas and waterfowl habitat and migration nesting areas, glaciers, alpine meadows.

(b) **General studies** of the whole basin and detailed studies of each reservoir to determine potential sites for all types of facilities such as parks, campsites, harbors, scenic viewpoints, and so on. These studies will of necessity overlap and be the compounding of specific studies, some of which by their very importance are dealt with individually and hereafter as other main requirements.

Effective administration and controls also must be instituted in the beginning to co-ordinate all surveys and, later, to carry out the recommendations and operate the facilities and program.

### 3. Pollution Control

Pollution control must be exercised to **prevent the deleterious dumping of untreated industrial waste and raw sewage** in any stream in the Columbia Basin in Canada both above and below all reservoirs to protect:

- (a) present and possible future municipal use;
- (b) the recreation areas, present and potential;
- (c) the sport fishery, present and potential;

particularly since the "sweeping out" effect of the spring freshet will be largely lost and low flows will decrease oxidation.

Dr. Ian McTaggart-Cowan's words are well worth heeding (Reference 2): "Water, fresh, clean water, is going to be one of the rarest and most-sought-after commodities, and we must take every step to treasure it."

### 4. Reservoir Clearing

All vegetation must be cleared from the present low water level up to 10 feet of elevation above the maximum storage level. This is **an absolute necessity** if use is to be made of the reservoir for any purposes mentioned in this brief other than water storage and power generation.

### 5. Public Access

Public access is necessary if full use of the above mentioned resources is to be achieved and should be allowed for as follows:

(a) by full implementation of B. C. Government policy as stated by the Hon. R. G. Williston (Reference 1):

"In the future, on all lakes in the Province, before any alienation takes place, a joint survey will be conducted by an Inspector of Lands and a member of the Department of Recreation and Conservation. Their study will classify the shore line into various categories. A first class recreational area will be **set aside for the use and enjoyment of the public**. Second class recreational areas will be made available for lease rental on a twenty-one year basis. The least desirable areas may be put up for other types of alienation if so recommended. . . The size of the lake frontage to any one holding will be reduced, and in any event shall not extend more than three chains. Commercial leases will be dealt with independently, but as a general rule not more than ten chains of foreshore will be allocated to any one application.

(b) Construction of main **highways to and along the full length** of all power and storage developments on the Columbia and Kootenay Rivers.

(c) Construction of **parks and campsites** commensurate with the needs of the resident present and future populations of the Columbia Basin and the tourist potential.

**NOTE**—because of the relative imminence of the Columbia Basin water power and storage developments, the government policy for more than a decade has been to restrict development of parks and campsites in the possible reservoir areas.

(d) Establishment of beaches to replace those lost.

(e) Establishment of harbours and boat launching stations.

(f) Establishment of branch roads to give easy access to the shores over the full length of the reservoirs.

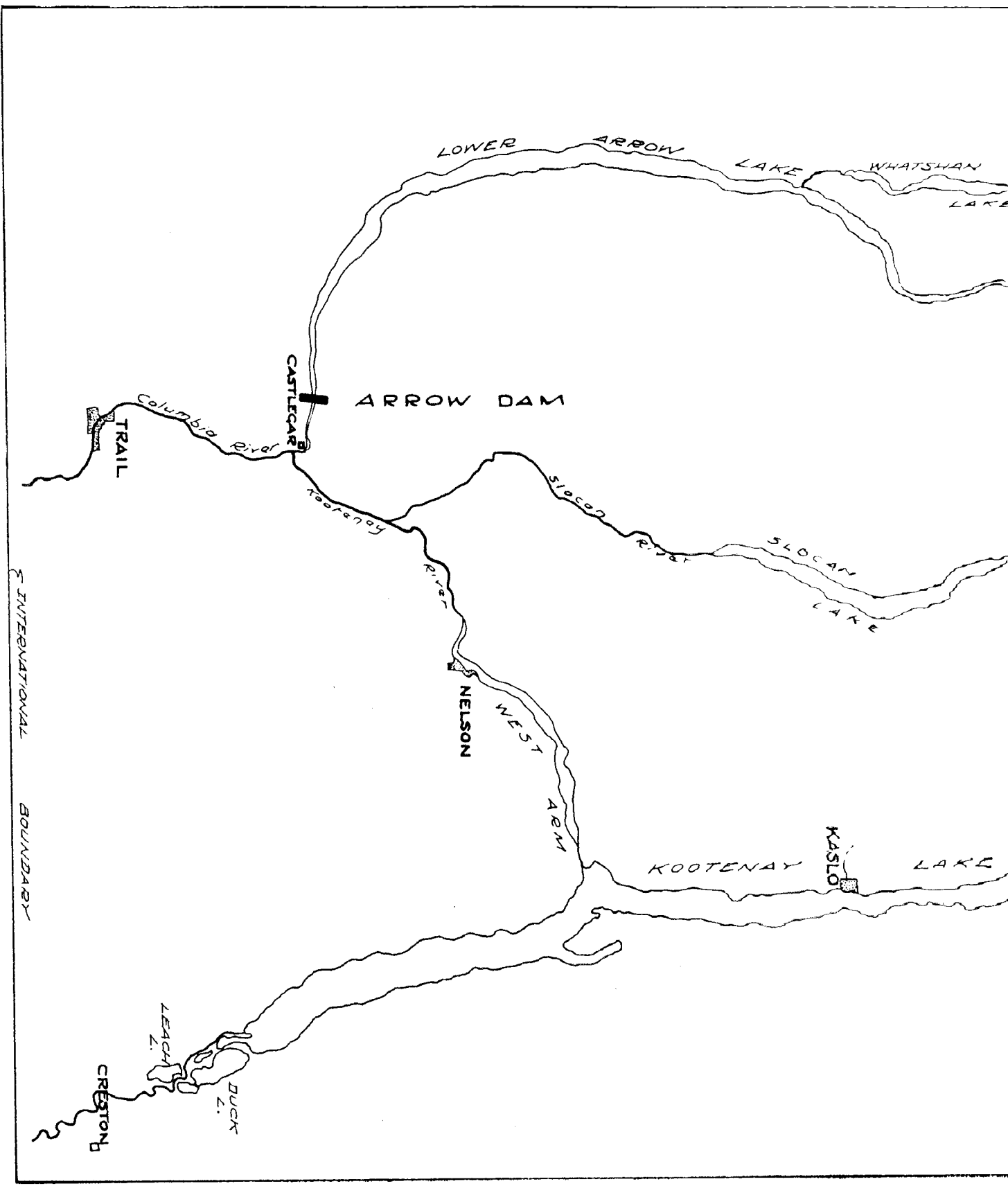
(g) Establishment of facilities for boat transfer around or over dams.

Before leaving the subject of public access, a further quote from the Hon. R. G. Williston is worthy of note (Reference 1):

"It has bothered my Department, as well as my Colleague, the Minister of Recreation and Conservation, that **action we take today may jeopardize future recreational needs of the people** of tomorrow. No one is possessed of foresight which will enable him to foresee the needs of the next generation, but by allocating specific recreational areas for use now, and by retaining other areas in the name of the Crown on a purely leasehold basis, it will be possible for future generations to be served without the necessity of expending large capital sums to secure property. I think this move will tend to limit capital gain within the field of recreational holdings, and I think this is right."

### 6. Wildlife Management

Knowledge of both the **effect of power and storage reservoirs** upon the present state of the wildlife resource in the Columbia Basin and the determination of the future potential after dam construction, is of



LOWER ARROW LAKE WHATSHAN LAKE

Columbia River CASTLEGAR ARROW DAM

TRAIL

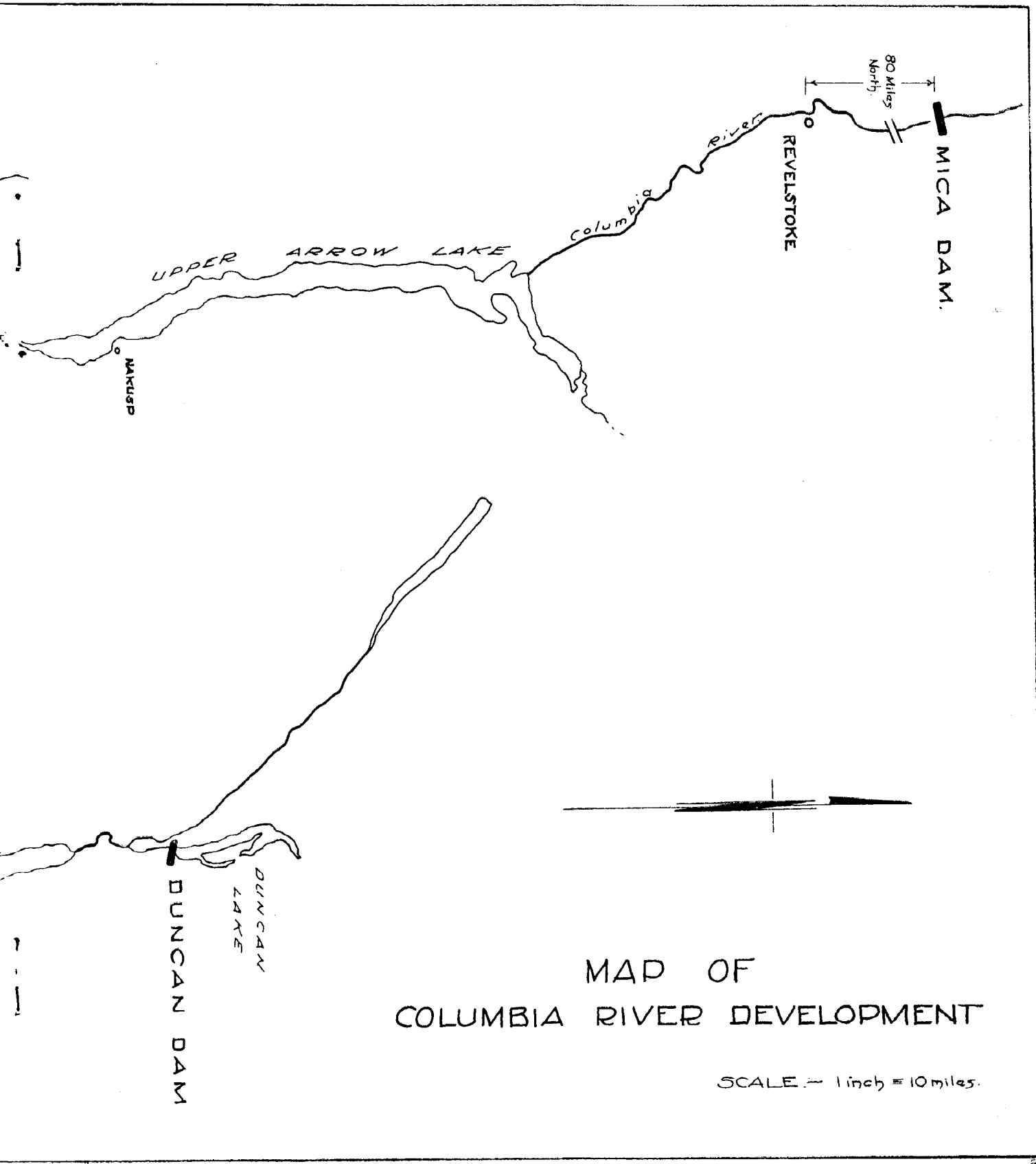
Kootenay River SLOCOO RIVER SLOCOAN LAKE

NELSON WEST ARM

KOOTENAY KASLO LAKE

LEACH L. DUCK L. CRESTON L.

INTERNATIONAL BOUNDARY



MAP OF  
COLUMBIA RIVER DEVELOPMENT

SCALE - 1 inch = 10 miles.

## *. . . resources do not stand alone*

**prime importance** if the full use of the water and land resources in question is to be arrived at.

(a) **Columbia Basin biological survey**

- **A complete and detailed biological survey must be carried out to determine the ecological effect on wildlife of each and all proposed power and storage dams.**

That the effect on wildlife is great and of much importance can be seen in the following quotations (Reference 8):

✓ "Availability of this power will give time to resolve local problems of the effect of dam and reservoir construction in critical areas in the United States on fish and wildlife."

✓ "Moreover, and of great significance to the conservation of all natural resources, this large block of power provides time for solving problems relating to fish, wildlife, and other factors, so that the impact of large storage dams in the United States on them may be lessened by the time such projects are needed to meet load growth."

What problems were these that concerned the United States negotiations? What was their importance that made it worthwhile to buy time?

The answers are found in a publication of the National Wildlife Federation headquarters at Washington, D. C., from which the following extensive quotations are taken (Reference 9):

**From the frontispiece** — "Orderly development of a balanced civilization in America's Great Northwest **must include conservation** and rebuilding of salmon runs, **preservation of scenic and wilderness treasures**, and conservation of game, along with irrigation, power, and flood control."

**From the page titled: "A Task for All Americans"**

"The Columbia can be developed in such a way as to utilize the energy of its falling waters, to control its floods, to manage its fisheries and other renewable resources on a sustained yield basis, and at the same time to save the best of its great scenic and wilderness attractions.

"If so sensibly developed and conserved in the public interest, the resources of the Basin can add immeasurably and permanently to the national security and to the welfare of all Americans.

"It is a challenge to the best of American planning genius. It is a call for political statesmanship. It is a task requiring knowledge and co-operation that places regional and national interest above local interest, public interest above selfish interest.

"The purpose of this publication is to set forth the conservation guide lines upon which this kind of planning must be built. It is to outline the pattern for development in the long range public interest.

"Here is a task for democracy at its best: the kind of democracy that springs from informed citizens, demanding the best of their public servants."

**From the page titled: "The Principles":**

"Since some resources of the Columbia Basin have been developed at the expense of others, the

American public should insist that in the future **all development will proceed only when it can be demonstrated that it is unnecessary to completely destroy important resources** in order to utilize others.

"Tributaries now open or relatively open to migrations of anadromous fish and presently supporting important percentages of the remaining salmon and steelhead fisheries, or which have high fish producing potentials, must be kept open. Anadromous fish population must not only be saved but should be enhanced and enlarged.

"Until such time as new fish passage devices have been discovered and proved to be effective in surmounting the deleterious effects now caused by dams on migratory fish survival, any new reservoirs authorized or constructed in the Columbia Basin must be confined to reaches and tributaries already closed to substantial runs of anadromous fishes by existing dams or natural barriers.

"Research must be accelerated on problems related to the effects of dams on fish survival and on ways to overcome these problems. Complete answers to fish passage problems must be found before permission is granted to construct dams that now present barriers beyond man's ability to solve.

"Future reservoir construction must avoid sites that would invade National Parks or wilderness areas or despoil outstanding scenic values.

"Future reservoir construction must avoid sites that would flood out natural winter ranges of important big game herds.

"Reservoir projects which would yield important benefits in the public interest, while avoiding destructive and offsetting effects upon other resource values, should be granted high priority and scheduled for early development.

"Research findings by technical staffs of the state and federal agencies responsible and qualified to manage the resources, must be the basis for appraising the effects of dams as well as regulations governing the harvest and utilization of fish and wildlife. **The emotional appeal should have no bearing on scientific findings.**"

**From the page titled: "The Pattern":**

"Other ways to help meet Northwest power needs, beside building fish-killing dams, might include: Hasten U.S. - Canadian co-operation in developing international parts of the Columbia: . . ."

**From the backpiece:**

"Special interest jousting, political bickering and shortsighted selfishness cannot be abolished. The effects of such manoeuvres can, however, be dampened to the degree to which an informed public is willing to work toward the give-and-take principle of comprehensive development.

"When all of the resources of the Columbia basin can be developed for their highest use without completely destroying one to have another, everyone will prosper. In this manner dams may be designed to supply power needs, to control floods and to supply irrigation water. When these waters are

## . . . resources do not stand alone

kept free of soil and other pollution the welfare of the fisheries, the big game populations, forest products, wilderness, agriculture endeavors, scenic attractions and all other necessities will be assured.

**"These things can be accomplished if conservation-minded citizens in the basin and throughout the nation will go to work. A significant part of the task is making yourself heard."**

The preceding quotations from Reference 9 indicate to the fullest the problems for which the U.S. negotiators wished to buy time.

It is granted that the preservation of the salmon runs is their first concern; however, it should be recognized that **this, too, is B. C.'s and Canada's first concern** and for that reason Columbia River development was chosen over the Fraser River. Also it is to be recognized that the anadromous fish were by no means the only problem and that these others will be our problems, too. We must recognize further that **B. C. needs and wants power** and that the Columbia River is an obvious source and that the **Canadian negotiators have done well to have gained recognition of the principle of payment for downstream benefits.** The challenge to the citizens of the Canadian section of the Columbia Basin, the citizens of B. C., their government, provincial and federal, and the agencies of these governments, is **to avoid and not repeat the errors now obvious in the development of the American section of the Columbia Basin** to date, to minimize the detrimental effects, and to **take advantage of the potential for improvement.**

With respect to wildlife, the answers to the challenge can be determined only by biological survey.

### (b) Scope of the biological survey

- The survey must include the **whole of the Columbia Basin in Canada** as affected by all proposed water power and storage developments in the Canadian and United States sections of the Columbia Basin; and it must determine

- The direct effect on each reservoir and all combinations of reservoirs; and

- The indirect effect of the above in that the compensatory adjustments to all other interests such as agriculture, forestry, etcetera, and such items as highway relocation, should be considered and allowed for.

(c) **The implementation of the recommendations of the survey** must give adequate correction or where correction is not possible, compensation.

(d) Thus the work to be carried out in the survey logically falls into three categories:

- ✓ **Firstly, the measurement of the present wildlife resource**, the assessment of the effects of the developments, and based upon these and the potential of the final conditions, the recommendations for the future management.

- ✓ **Secondly, the continuing study** during dam construction and compensatory adjustments as noted

previously, to see that the necessary corrective measures are properly carried out.

- ✓ **Thirdly, the continuing re-evaluation of the initial measurement in light of the changing conditions, and thus from these three the final realization of the aims of the initial recommendations.**

(e) It is recognized that the requirements of such a survey will tax the personnel resources of both the Canadian Wildlife Service and the Fish and Game Branch of the Department of Recreation and Conservation of B. C., particularly in the initial stage. It is expected that any personnel shortage will be made up by the hiring of men from the many commercial organizations offering consultative biological services.

### (f) Cost of the biological survey:

- It is estimated that it will take four years to make a general survey of the whole Canadian Basin, plus specific surveys of each reservoir in detail, at a total cost for the four years of \$300,000. Thereafter, the continuing studies and management will require \$25,000 per annum, which does not include the capital or operating costs of any wildlife management facilities installed as a result of the surveys.

- The breakdown of the cost of the four year survey is as follows:

#### Basic Survey Staff and Equipment

2 crews (2 men each - total 4) for 4 years @ \$450 each/month	\$ 86,000
Living allowance - transportation, meals, hotels, etcetera,	\$ 24,000
Equipment-4 man 18-ft. power boat	
River canoe	
Camping equipment	
Winter equipment - skis, snowshoes	
4-wheel drive truck	
4-wheel drive landrover	
Cameras, binoculars, etcetera	
Engineering equipment, transit, level, rods, etcetera	
Stationery -	
maps, pencils, etcetera	\$ 15,000
Operation of equipment	\$ 6,000
Scientific analysis - soils, vegetation	\$ 4,000
Report printing	\$ 5,000
Contingencies	\$ 10,000
Sub-total -	\$150,000

#### Special Surveys

Part time staff - wages and expenses	\$ 50,000
Consultants - fees	\$ 5,000
Flying - helicopter	\$ 75,000
other planes	\$ 15,000
Equipment	\$ 5,000
Sub-total -	\$150,000

TOTAL .....\$300,000

## *. . . resources do not stand alone*

(g) Economic potential of the wildlife resource.

This brief will not attempt to fix the total dollar value potential in the wildlife of the Columbia Basin. The yardstick of knowledge that we have today would only greatly underestimate it. **The knowledge determined by the required survey will just begin to suggest to us the ultimate treasure we will possess.**

Let us, however, cite three pertinent examples;

(i) **East Kootenay—Big Game.**

To quote **Game Biologist Glen Smith** (Reference 10):

“What I am really talking about is the finest game resource and the finest hunting country in this continent. The East Kootenay contains the greatest variety and, in some cases, density of big game species found today in North America. Big-horn sheep, mountain-goat, and caribou, moose, elk, mule deer, white-tailed deer, black and grizzly bear comprise the superb variety of big game species indigenous to the region, all of which are taken annually by hunters. The area is truly ‘unique’.”

The quotation having defined the resource; what is it worth? Today the estimate is **well over \$1,000,000 per annum**. Tomorrow it is sure to be many times that.

(ii) **The Arrow Lakes—Sport Fishery.**

During the 1960 annual meeting of the B.C. Federation of Fish and Game Clubs, the **Hon. Earle C. Westwood**, Minister of Recreation and Conservation for B.C., stated that a productive fish lake with suitable access, so that it can be well used by tourists, adds a real value to a region's economy, and this value has been measured on certain Okanagan lakes to be in the order of \$100 per acre. Take your choice of dollar per acre factor and apply it to 130,000 acres of storage reservoir on the Arrow Lakes.

(iii) **The Arrow Lakes—Deer.**

The estimated number of deer killed is in the order of 440 per annum. Efficient cropping of the indicated herds would give a kill in the order of 1,050. An informed estimate of the money spent by hunters per deer taken is \$135. Thus the Arrow Lakes deer herds today have a potential value of approximately

\$140,000 per annum. With improved access and management, it is not unreasonable to expect to double or even triple this potential.

Thus, from these three limited examples, it is readily seen that the cost of the surveys will be minor and the value of the resource identified for management and cropping will be major.

To quote the Hon. Earle C. Westwood from the speech with which he “pacified the sportsmen” (Reference 11):

“In taking that Conservation Fund and putting it into General Revenue, it doesn't mean by any means that we are not, as a government, deeply concerned about conservation and the work that must be done in the conservation field in the years that lie ahead.

“As far as your Conservation Fund is concerned, therefore, I can assure you, you have nothing to worry about in respect to it because we are definitely going to carry on conservation work and protect the wildlife of this Province to the very best of our ability.”

In the light of Mr. Westwood's words, let it be remembered that the Conservation Fund at the time of its “disappearance” totalled in the excess of \$300,000, and if the principle upon which it was established and the formula upon which it was based had been practiced during the intervening years, the total today would be in excess of \$1,000,000.

And finally to quote **Commissioner F. R. Butler** (Reference 12):

“Through sound reasoning and from experience there would appear to be no question, that as our population increases, **so will the need be ever present for steps to be taken to adequately manage, conserve, and protect our wildlife.** If appropriate measures are **not taken**, we will see our **wildlife resource dwindle**. It is axiomatic that the potential of any resource to generate new business will be largely unrealized if effective use of the resource is curtailed by the unreasonable claims of competitive users.

“We cannot substitute the loss of our best game range by future acquisition in remote areas. We must **protect our big game** where it is today.”

## E.—THE GENERAL PROPOSAL



The proposal to this point has been in general terms and covers all proposed water power and storage developments in the Columbia Basin in Canada. The remainder of the proposal will deal with specific items.

## *. . . development for the future*

Before presenting the specific items, however, some significant quotations are of interest.

The Hon. R. G. Williston (Reference 1):

“Surely, our recreational resources belong to all

## *. . . development for the future*

people and should not be made the means by which some are able to profit at the expense of the majority and of future generations.”

The Hon. Earle C. Westwood (Reference II):

“I have the thought in mind that all of us, working together with a common purpose, can build this new Ministry of ours up to what we feel in our own minds should be its full importance in the life story of the Province of British Columbia. We feel that as time goes on, the importance of this new Ministry will rank second only to forestry in the field of industry, recreation, conservation, and all those related things that are so necessary to amenable living in any country.”

Dr. D. B. Turner (Reference 3):

“The importance of the recreational resources to the British Columbian, present and future, is simply incalculable.

“B.C. has unmatched natural attractions which make it one of the finest and most beautiful areas in

the world and hence a setting in which a remarkable civilization can flourish.”

Our neighbors to the south did not realize, in sufficient time, the importance of their natural resources as a recreational resource in maintaining the best way of life. **Today they are spending large sums of money to try to recoup the great loss.**

The challenge is great, the paths to the goal are many, the first step is to realize the full potential of the recreational resource of the Columbia Basin, but think not only of the Columbia Basin but rather of British Columbia and all future such developments in British Columbia, yes and even Canada.

For from the total experience gained in the surveys, the plans based upon the surveys, and the practices based upon the plans, will come the fuller and yet more full recreational development of each succeeding reservoir and project; and all to the advantage of our future and the future of those who follow us in British Columbia and Canada.

### F.—SOME SPECIFIC ITEMS

## *where the start should be made . . .*

Since the recent treaty negotiations indicate the likely first projects to be Arrow Lakes, Mica Creek, Duncan Lake, and Libby, the detailed surveys mentioned previously should of course be carried out on these reservoirs first.

Likewise the following specifics are limited to these reservoirs only.

**The Arrow Lakes** are covered in limited detail to give type problems and suggested corrections or alternatives are noted. Such problems will exist in any proposed reservoir and must be found and their degree arrived at by survey and the remedial action based on the scientific facts of the survey.

**Mica and Duncan Lake** are covered in less detail with the peculiar and more pertinent circumstances commented upon.

#### 1. POLLUTION CONTROL.

##### (a) **Arrow Lakes**

- (i) ● Municipal sewage treatment
  - Revelstoke
  - Nakusp
- (ii) ● Industrial waste
  - from forestry: sawdust, etc.
  - from mining: concentrator tailings, etc.

##### (b) **Duncan Lake**

- (i) ● industrial waste: as above.

##### (c) **Mica Creek**

- (i) ● Municipal sewage treatment
- (ii) ● Industrial waste as above.

##### (d) **Libby**

- (i) ● Municipal sewage treatment
  - Creston
  - Nelson
  - Bonners Ferry.
- (ii) ● Industrial waste
  - from forestry: sawdust
  - from mining: concentrator tailings, etc.
  - from breweries.

##### (e) **Downstream Areas**

as affected by some or all of the above developments.

- (i) ● Municipal sewage treatment
  - Robson
  - Castlegar
  - Kinnaird
  - Trail





**WATER FOWL HABITAT** and its preservation or replacement elsewhere are major concern of the West Kootenay zone association. Here is another shot of the Duncan marshes which provide cover for thousands of birds. Geese are found here in large numbers.

**DEER AND ELK** winter range above the Duncan marshes is well depicted here. The association says (Page 18) that loss of this bottom land will decimate Duncan-Lardeau basin herds, and corrective measures are sought. Probable approach to loss is compensation by improvement of East Kootenay winter ranges.



## *. . . where the start should be made*

- (ii) ● Industrial waste
  - from forestry: sawdust
  - pulp mill effluents, etc.
  - from mining: concentrator tailings
  - from smelting and refining of metals?
  - from chemical and fertilizer production?

### 2. RESERVOIR CLEARING.

Presents an excellent opportunity for short term experiments in controlled burning to ascertain what constitutes a minimum combination of existing factors which, when subjected to fire, would produce a measurable improvement to big game forage.

This is most pertinent in the Mica Creek reservoir and may also be applicable to some or all of the reservoirs.

### 3. PUBLIC ACCESS.

#### (a) Arrow Lakes

- (i) ● location of parks—the above-water sections of partially inundated orchards would make the most attractive of parks.
- (ii) ● location of campsites—note as for parks.
- (iii) ● location of harbors
- (iv) ● location of boat launching facilities
- (v) ● location of beaches
- (vi) ● location of highways
- (vii) ● location of branch roads

#### (b) Duncan Lake )

(c) Mica Creek ) as above for Arrow Lakes

#### (d) Libby )

### 4. WILDLIFE MANAGEMENT.

#### (a) Arrow Lakes

- (i) ● loss of fish spawning areas
  - narrows between Upper and Lower Lakes, particularly between Edgewood and Needles and below Burton
  - tributary stream deltas

—to be corrected by the construction of artificial spawning beds and/or hatchery and fish planting programs.

- (ii) ● loss of water fowl habitat and resting areas
  - narrows between Upper and Lower Lakes
  - main stream
  - neighboring swamps and marshes
    - particularly adjacent to Cranberry Creek—flocks of up to 500 geese have been observed in the delta below Cranberry Creek
  - marsh lands on the Columbia between Arrowhead and Revelstoke.

—to be corrected by **improving same elsewhere in the flyways by establishment of a wildlife management area at Duck Lake.**

- (iii) ● loss of game lands and winter range
  - lowlands adjacent to the lakes and their tributary streams
  - deer winter ranges exist as follows:

- west of Snag Bay between Cinnamon Creek and Johnston Creek—these deer come down from the Lightning Peak area
- between Deer Creek and the north fork of Hutchinson Creek
- Edgewood towards Whatshan Lake
- Beaton area.

—to be corrected in the area affected if this is possible and, if not possible, to be compensated for by improvement of game winter ranges in the East Kootenay.

#### (b) Duncan Lake

- (i) ● loss of fish spawning areas from flooding
  - lake tributary stream deltas
  - Duncan River and tributaries up stream from Duncan Lake

- (ii) ● Potential loss of fish spawning because of reduced downstream flows
  - Duncan River and tributaries (particularly the Lardeau River) downstream from Duncan Lake
  - this is of great significance if the present program of improvement of the Kootenay Lake sport fishery now under way by the Fish and Game Branch of the B.C. Department of Recreation and Conservation is to be successful, or worse still if the fishery is not to be lost altogether.

#### Reference 13

—shows that of the flow entering Kootenay Lake from the Duncan River, 20 to 25 per cent is made up from the Lardeau River drainage while 75 to 80 per cent is made up from the remainder of the Duncan drainage.

—shows that the flow of the Duncan River into Kootenay Lake can be traced as far south as Kaslo and at times even to Ainsworth.

—credits this “river within a lake” as the attractive condition for Lardeau River spawners and suggests that a 25 per cent decrease in Duncan discharge flow would not be harmful.

—thus operation of the Duncan Lake storage must allow for the required conditions of water temperature and flow to maintain the spawning run of the Kootenay Lake sport fishery or, failing that, other means of perpetuating and improving this resource must be arrived at. Consideration should be given to stream improvement

## *. . . where the start should be made*

and artificial spawning channels on the Lardeau River.

- (iii) ● Loss of water fowl habitat and resting areas

—Duncan River marshes, upstream from Duncan Lake. In this area, there are 4500 acres of waterfowl habitat, all to be inundated. See photographs—the loss here cannot be over-emphasized.

—to be corrected by **improving same elsewhere in the flyway by establishment of a wildlife management area at Duck Lake.**

- (iv) ● Loss of game lands and winter range  
—lowlands adjacent to the lake and its tributary streams. The loss of bottom land winter range for deer and elk is obvious in the photographs and will decimate the herds of this basin.

—to be corrected, as for Arrow Lakes.

### (c) **Mica Creek**

Today this reservoir area is underdeveloped and little known. The challenge of the Mica Creek reservoir is to create a new recreational area based upon the tourist attraction that the dam will be.

In addition and based upon the biological surveys, the following losses will have to be considered.

- Fish spawning areas
- Waterfowl habitat and resting areas
- Game lands and winter ranges—the controlled burning experiments mentioned previously are most pertinent here.

### (d) **Libby**

- (i) ● loss of fish spawning areas: there will be some loss of stream sport fishery here
- (ii) ● loss of waterfowl habitat and resting areas (assumed to be minor—surveys will prove up)
- (iii) ● loss of game lands and winter ranges. This project will be a serious blow to a million dollar big game industry already suffering from abusive single-use practices in agriculture and forestry. Effective big game management here is restricted today; Libby without corrective measures may well be its death blow in the reservoir area.

One possibility for improved practice is the purchase of the whole farm wherever partial flooding results, and the use of the above-high-water sections for game management and allowing, where feasible, multiple use such as Christmas tree cutting, controlled cattle grazing, and hay cutting. In fact, it is considered that the future of this game resource rests in purchase of private property for use as described above, and that this is the most economic development of much of the bottom land in the East Kootenay section of the Rocky Mountain Trench.

Biological surveys here cannot be too detailed.

JOHN WELTON,  
Chairman.

## references



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12. Commissioner F. R. Butler, B.C. Fish and Game Branch, Department of Recreation and Conservation, 1960 annual meeting of the B.C. Federation of Fish and Game Clubs.
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The problems of resources and their management "go to the very heart and root of man—his integrity. How great is his integrity and honesty of purpose? How far will he choose to be guided by his wisdom and power of reasoning and sense of morality, how far by short-term self interest? Because the future is unknown and changes in many unforeseen ways from its obvious probabilities, he can only try the matter out. But there is no excuse for not trying. It is a matter of puzzling a way among the conflicting ideas and advices and opinions, and reaching decisions as honestly as may be."

RODERICK HAIG-BROWN.

# ***NOTES***

