

W A T E R   P O W E R S

BRITISH COLUMBIA

CANADA

ANNUAL REVIEW

JULY 1964

WATER RESOURCES SERVICE  
Department of Lands, Forests, and Water Resources

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## WATER POWER AND HYDRO-ELECTRIC DEVELOPMENT

JULY 1964

### Generation and New Developments

During 1963, the total amount of energy generated by hydro-electric plants in British Columbia was 14,260,000 megawatt-hours. This represents an increase of 5.09% over the corresponding value for the previous year.

Total electrical energy production in 1963, from all sources, amounted to 15,418,000 megawatt-hours. Over 92% of all energy was produced by hydro power.

The total energy consumption ten years earlier, in 1953, was 6,122,000 megawatt-hours, so that over the last ten years the load has grown at an average rate of 9.7% compounded annually. Generation by private industries accounts for about half of the total; most of which is produced by the two major industrial users, Alcan and Cominco, who account for 26% and 21% of the provincial total respectively. It is only natural, therefore, that the characteristics of these two industrial loads reflect very heavily on the provincial total.

The most recent estimate of the total prime power generating capability of all the undeveloped sites in British Columbia comes to over 22,000,000 kilowatts. In comparison, the total hydro power generating capability installed to date is approximately 2,658,000 kilowatts.

The only new installation made in 1963 was the third generating unit at Waneta. This unit added another 90,000 Kw of capacity at the Cominco Plant, to bring its total to 270,000 Kw. A Gas Turbine unit rated at 5,000 Kw is under installation at Prince George but has not yet been accepted by the Authority at this date.

Work is proceeding on the installation by the Cariboo Canim Ranch Ltd., of a 132 Kw plant on the Canim River.

The third 150,000 Kw unit at the Burrard (Ioco) thermal plant is expected to be in operation in September 1964, and provisions have been made for the installation of a fourth unit as required.

PLANNING - Columbia River

During 1963 negotiations were initiated between Canada and the United States of America, on the sale of Canada's share of the downstream power benefits which arise out of the Columbia River Treaty. Prior to and concurrent with these negotiations on the sale of the Canadian entitlement, negotiations also took place on modifications and clarifications of the Columbia River Treaty that could be covered by a protocol. Ministers of both the Federal and Provincial Governments with senior officials from these Governments as well as the B.C. Hydro and Power Authority were on the Canadian team.

Extensive computer studies were carried out, to estimate as closely as possible what the downstream benefits may be under various conditions. These studies were done in Portland, Oregon, by experts from both countries, and the resultant report was submitted to the governments concerned.

In the early part of 1964 the protocol to the Columbia River Treaty was signed by the two countries. This protocol serves to clarify several points in the Treaty so that there can be no doubt as to its interpretation. Attached to it were the general conditions covering the terms of sale of the Canadian entitlement to downstream benefits. In addition, it incorporated several small changes to the Treaty, all of which are to the advantage of Canada. Under the terms of the Treaty the Protocol included the terms of sale of the Canadian entitlement. The United States is to pay Canada in U.S. funds the sum of \$254.4 million for the downstream benefits and \$64.4 million for flood control. These monies are estimated to be sufficient to pay for the full capital costs of Mica, Arrow and Duncan storage projects and about half the cost of Mica generation. This ensures low cost at site generation when it is needed from Columbia generation plants.

Prior to commencement of the negotiations on the sale of the Canadian entitlement, a Canada - B.C. Agreement was signed covering the Columbia River development. A further Agreement was signed prior to the finalization of the Protocol and the Terms of Sale of the Canadian entitlement.

The External Affairs Committee of the House of Commons held hearings on the Columbia River Treaty during April and May of 1964. The government of British Columbia presented a brief to this committee, as did many other interested parties. The External Affairs Committee recommended in favour of the Treaty, and by a subsequent votes in the House of Commons and Senate, final approval was achieved. It is expected that formal exchange of ratifications between the United States and Canada will take place on the 1st October.

Planning on the Columbia Treaty projects has reached the stage that construction of the first two projects, Duncan dam and Arrow Lakes dam, can be started immediately as soon as the Treaty is ratified. Planning on Mica dam, the third and largest Treaty project, is sufficiently advanced that it can be constructed when needed, without delay.

#### PLANNING - Fraser River

Early in 1964, the Fraser River Board submitted its recommendations on flood control for the Fraser River system to the governments of Canada and British Columbia. Under the proposed plan, six reservoirs would be created on the headwaters of the main stem and the major tributaries, in areas where, it was considered, their construction would not affect materially the migration of salmon. Five of the projects would be capable of storing the snowmelt runoff, whereas the sixth was designed to divert the flood flows of the McGregor River into the Parsnip River. The Board's report indicates that with this flood storage capacity, supplemented by the flood retention capabilities of the Nechako reservoir, the annual peak discharges of the Fraser River could be reduced to safe levels at the downstream communities of Kamloops, Prince George and Quesnel. With the addition of the available storage capacity on the Bridge River, and with the dykes in good state of repair, the Lower Fraser Valley would be protected against a flood of a greater order than that which occurred in 1948.

By incorporating power plants at the flood storage reservoirs, and by controlling the water releases, hydro-electric power could be produced which would provide returns sufficient to offset the cost of the projects. The five storage reservoirs in the Board's proposals would each be energy producers and these, with the output from three small run-of-river plants envisaged for the Clearwater River, would make available some 580,000 Kw of firm power for distribution on a provincial transmission grid. An additional 200,000 Kw would be developed at the Portage Mountain project on the Peace River as the result of diverting the McGregor River. The projects, estimated to cost about \$400 million, would be self-supporting if the energy could be marketed at just over 5 mills per Kw hour at the point of inter-connection with the main transmission system.

Development of the proposed reservoirs and improvement to the Lower Fraser Valley dykes, would provide flood protection against spring high waters of 26 feet at Mission. This represents protection from a flood having just over a one percent chance of occurrence in any year, and in a year such as we have recently experienced the river levels could be kept to a level to reduce the present unmanageable problem of seepage below the dykes.

DEVELOPMENT - Peace River

Construction of the Portage Mountain dam on the Peace River is continuing on schedule.

Since May last year there have been many new developments and the appearance of the damsite is changing rapidly. The three 48 foot diameter diversion tunnels were completed on schedule, the rock plug protecting them was blasted out, and the diversion tunnels now divert the waters of the Peace River past the damsite.

Both the first and second stages of the upstream cofferdam have been completed. The diversion works successfully withstood the highest water flows known on the river this year. The damsite has been dewatered and is being cleaned out. A sub-contract has been let for deep grouting and some deep grouting and blanket grouting is already finished.

Work is proceeding on the construction of a conveyor belt system to carry the fill material to the damsite. The belt, an unprecedented 66 inches wide and 3 miles long, will transport material at the rate of 12,000 tons per hour.

The material will pass through a materials processing plant, presently under construction, which will be the largest and most modern plant of its kind ever built. The belt and plant is expected to be in full production in August of this year.

TABLE I  
ELECTRICAL GENERATING STATISTICS FOR BRITISH COLUMBIA  
1953 - 63

| Year | ELECTRICAL GENERATION IN Mwh |             | Total      | Total in<br>Aver.Mw. | Increase on<br>previous year<br>% |
|------|------------------------------|-------------|------------|----------------------|-----------------------------------|
|      | Hydro (1)                    | Thermal (2) |            |                      |                                   |
| 1953 | 5,585,814                    | 535,892     | 6,121,706  | 698.8                | 12.85                             |
| 1954 | 6,384,762                    | 568,780     | 6,953,542  | 793.8                | 13.57                             |
| 1955 | 7,859,933                    | 628,080     | 8,488,013  | 968.9                | 22.05                             |
| 1956 | 9,315,129                    | 740,058     | 10,055,187 | 1,147.8              | 18.47                             |
| 1957 | 10,161,546                   | 586,385     | 10,747,931 | 1,226.9              | 6.90                              |
| 1958 | 11,218,679                   | 704,077     | 11,922,756 | 1,361.0              | 10.93                             |
| 1959 | 11,750,270                   | 779,915     | 12,530,185 | 1,430.3              | 5.09                              |
| 1960 | 12,669,191                   | 1,020,756   | 13,689,947 | 1,562.8              | 9.26                              |
| 1961 | 12,371,019                   | 1,050,087   | 13,421,106 | 1,532.1              | - 1.96                            |
| 1962 | 13,571,637                   | (3)         | 14,730,000 | 1,674.7              | 9.30                              |
| 1963 | 14,262,400                   | (3)         | 15,417,600 | 1,760.0              | 5.09                              |

(1) From Water Rights Branch records.

(2) From Bureau of Economics and Statistics.

(3) Estimate.

TABLE II

PRINCIPAL ELECTRIC GENERATING PLANTS IN BRITISH COLUMBIA  
(IN OPERATION DURING 1963)

| Hydro Plant<br>Code No. | Name of Plant | Locality | Type <sup>(1)</sup> | Nameplate<br>Capacity<br>in Kw. |
|-------------------------|---------------|----------|---------------------|---------------------------------|
|-------------------------|---------------|----------|---------------------|---------------------------------|

PUBLIC AGENCIES

British Columbia Hydro and Power Authority - Hydro Plants

|      |                    |                |   |            |
|------|--------------------|----------------|---|------------|
| 7100 | Alouette           | Mission        | H | 8,000      |
| 7150 | Ash River          | Alberni        | H | 25,200     |
| 7360 | Bridge River No. 1 | Lillooet       | H | 180,000    |
| 7410 | Bridge River No. 2 | Lillooet       | H | 248,000    |
| 7570 | Cheakamus          | Squamish       | H | 140,000    |
| 1870 | Clayton Falls      | Bella Coola    | H | 702        |
| 7720 | Clowhom            | Squamish       | H | 30,000     |
| 7770 | Coquitlam-Buntzen  | Port Moody     | H | 76,700     |
| 8330 | John Hart          | Campbell River | H | 120,000    |
| 8380 | Jordan River       | Victoria       | H | 26,400 (2) |
| 8600 | La Joie            | Bralorne       | H | 22,000     |
| 8650 | Ladore Falls       | Campbell River | H | 54,000     |
| 8980 | Puntledge          | Courtenay      | H | 27,000     |
| 9040 | Ruskin             | Mission        | H | 105,600    |
| 9100 | Seton              | Lillooet       | H | 42,000     |
| 9200 | Shuswap Falls      | Vernon         | H | 5,200      |
| 9300 | Spillimacheen      | Golden         | H | 4,000      |
| 9350 | Stave Falls        | Mission        | H | 52,500     |
| 9570 | Strathcona         | Campbell River | H | 33,750     |
| 9630 | Wahleach           | Chilliwack     | H | 60,000     |
| 9730 | Whatshan           | Arrow Lakes    | H | 33,750     |

British Columbia Hydro and Power Authority - Thermal Plants

|   |   |                |   |        |
|---|---|----------------|---|--------|
| - | - | Alert Bay      | D | 1,200  |
| - | - | Bella Coola    | D | 1,057  |
| - | - | Blue River     | D | 575    |
| - | - | Boston Bar (3) | D | 950    |
| - | - | Burns Lake     | D | 2,936  |
| - | - | Chetwynd       | G | 3,000  |
| - | - | Dawson Creek   | G | 20,000 |
| - | - | Fort Nelson    | G | 2,311  |
| - | - | Hazelton       | D | 1,450  |
| - | - | Houston        | D | 1,200  |
| - | - | Kamloops (3)   | D | 4,500  |
| - | - | Lytton         | D | 954    |
| - | - | McBride        | G | 1,350  |
| - | - | Port Hardy     | D | 1,700  |
| - | - | Prince George  | G | 21,000 |

TABLE II (continued)

- 2 -

| Hydro Plant<br>Code No. | Name of Plant | Locality | Type (1) | Nameplate<br>Capacity<br>in Kw |
|-------------------------|---------------|----------|----------|--------------------------------|
|-------------------------|---------------|----------|----------|--------------------------------|

British Columbia Hydro and Power Authority - Thermal Plants (continued)

|   |                           |                 |    |         |
|---|---------------------------|-----------------|----|---------|
| - | Queen Charlotte (3)       | Queen Charlotte | D  | 306     |
| - | Quesnel (3)               | Quesnel         | G  | 15,000  |
| - | Sandspit                  | Sandspit        | D  | 1,200   |
| - | Smithers                  | Smithers        | D  | 3,880   |
| - | Terrace (3)               | Terrace         | D  | 3,000   |
| - | Tofino (3)                | Tofino          | D  | 1,075   |
| - | Valemount                 | Valemount       | D  | 700     |
| - | Vanderhoof (3)            | Vanderhoof      | D  | 1,600   |
| - | Mobile Unit No. 80 (road) | -               | D  | 500     |
| - | Mobile Unit No. 81 (road) | -               | D  | 500     |
| - | Mobile Unit No. 82 (road) | -               | D  | 500     |
| - | Mobile Unit No. 83 (road) | -               | D  | 500     |
| - | Mobile Unit No. 84 (rail) | -               | D  | 1,000   |
| - | Mobile Unit No. 85 (rail) | -               | D  | 1,000   |
| - | Mobile Unit No. 86 (rail) | -               | D  | 1,000   |
| - | Burrard (4)               | Port Moody (4)  | S  | 300,000 |
| - | Georgia (3)               | Chemainus (3)   | GT | 75,500  |
| - | Port Mann (3)             | Port Mann (3)   | GT | 100,000 |

The Corporation of the City of Nelson

|      |                |        |   |       |
|------|----------------|--------|---|-------|
| 7620 | City of Nelson | Nelson | H | 8,670 |
|------|----------------|--------|---|-------|

The Corporation of the City of Revelstoke

|      |                     |                |   |       |
|------|---------------------|----------------|---|-------|
| 7900 | Walter Hardman      | Revelstoke     | H | 4,000 |
| 8270 | Illecillewaet River | Revelstoke (3) | H | 900   |
| -    |                     | Revelstoke (3) | D | 2,000 |

The Village of Kaslo

|      |             |       |   |     |
|------|-------------|-------|---|-----|
| 3520 | Kaslo River | Kaslo | H | 212 |
|------|-------------|-------|---|-----|

PRIVATE UTILITIESEast Kootenay Power Co. Ltd.

|      |            |        |   |       |
|------|------------|--------|---|-------|
| 7050 | Aberfeldie | Fernie | H | 4,000 |
| 7930 | Elko       | Fernie | H | 9,600 |

Mirror Lake Power Ltd.

|      |                  |       |   |     |
|------|------------------|-------|---|-----|
| 1420 | Bjerkness-Mirror | Kaslo | H | 150 |
|------|------------------|-------|---|-----|



TABLE II (continued)

- 3 -

| Hydro Plant<br>Code No.                         | Name of Plant        | Locality                 | Type <sup>(1)</sup> | Nameplate<br>Capacity<br>in Kw |
|---|----------------------|--------------------------|---------------------|--------------------------------|
| <u>PRIVATE UTILITIES (continued)</u>            |                      |                          |                     |                                |
| <u>Northern British Columbia Power Co. Ltd.</u> |                      |                          |                     |                                |
| 7310  | Big Falls            | Prince Rupert            | H                   | 7,100                          |
| 9150  | Shawatlans           | Prince Rupert            | H                   | 1,400                          |
| -   | -                    | Prince Rupert            | D                   | 6,164                          |
| <u>West Kootenay Power and Light Co. Ltd.</u>   |                      |                          |                     |                                |
| 8050  | Goat River (3)       | Creston                  | H                   | 1,280                          |
| 8700  | Lower Bonnington     | Nelson                   | H                   | 41,000                         |
| <u>PRIVATELY OWNED - INDUSTRIAL</u>             |                      |                          |                     |                                |
| <u>Aluminum Co. of Canada Ltd.</u>              |                      |                          |                     |                                |
| 1090  | Kemano               | Kitimat                  | H                   | 707,200                        |
|   |                      | Kitimat                  | D                   | 8,000                          |
| <u>Anaconda Co. (Canada) Ltd. (5)</u>           |                      |                          |                     |                                |
| 7260  | Beach Powerhouse     | Brittania Beach          | H                   | 6,150                          |
| <u>Bralorne Pioneer Mines</u>                   |                      |                          |                     |                                |
| 7520  | Cadwallader-Bralorne | Bralorne                 | H                   | 800                            |
| 8210  | Hurley River No. 2   | Bralorne                 | H                   | 675                            |
| <u>B.C. Forest Products Ltd.</u>                |                      |                          |                     |                                |
|   |                      | Victoria                 | S                   | 4,500                          |
|   |                      | Youbou                   | S                   | 4,300                          |
|   |                      | Hammond                  | S                   | 4,000                          |
| <u>B.C. Bridge &amp; Dredging Co. Ltd.</u>      |                      |                          |                     |                                |
|   |                      | Vancouver<br>(home port) | D                   | 2,272                          |
| <u>B.C. Sugar Refining Company Ltd.</u>         |                      |                          |                     |                                |
|   |                      | Vancouver                | S                   | 3,750                          |

TABLE II (continued)

- 4 -

| Hydro Plant<br>Code No.   | Name of Plant    | Locality           | Type (1) | Nameplate<br>Capacity<br>in Kw |
|---|------------------|--------------------|----------|--------------------------------|
| <u>PRIVATELY OWNED - INDUSTRIAL (continued)</u>                 |                  |                    |          |                                |
| <u>Canadian Fishing Co. Ltd. (5)</u>                            |                  |                    |          |                                |
| 1660  | Butedale Creek   | Princess Royal Is. | H        | 430                            |
| 4160  | Mercantile Creek | Ucluelet           | H        | 20                             |
| <u>Canadian Forest Products Ltd.</u>                            |                  |                    |          |                                |
|   |                  | Port Mellon        | S        | 5,000                          |
|   |                  | Vancouver          | S        | 10,000                         |
| <u>Cariboo Gold Quartz Mining Company Ltd.</u>                  |                  |                    |          |                                |
|   |                  | Wells              | D        | 1,875                          |
| <u>Carnegie Mining Corporation (5)</u>                          |                  |                    |          |                                |
| 5640  | Slocan Star      | New Denver         | H        | 200                            |
| <u>Columbia Cellulose of Canada Ltd.</u>                        |                  |                    |          |                                |
|   |                  | Watson Island      | S        | 15,000                         |
| <u>Consolidated Mining and Smelting Co., of Canada Ltd. (5)</u> |                  |                    |          |                                |
| 7460  | Brilliant        | Nelson             | H        | 81,600                         |
| 7820  | Corra Linn       | Nelson             | H        | 40,500                         |
| 9250  | South Slocan     | Nelson             | H        | 47,250                         |
| 9520  | Upper Bonnington | Nelson             | H        | 55,125                         |
| 9680  | Waneta           | Trail              | H        | 270,000                        |
| 4760  | Raging River     | Port Alice         | H        | 1,760                          |
|   |                  | Kimberley          | S        | 4,500                          |
| <u>Crown Zellerbach Ltd. (5)</u>                                |                  |                    |          |                                |
| 8820  | Ocean Falls      | Ocean Falls        | H        | 13,320                         |
| -   |                  | Ocean Falls        | S        | 14,500                         |
| <u>Crown Zellerbach Building Materials Limited</u>              |                  |                    |          |                                |
|   |                  | New Westminster    | S        | 12,500                         |
| <u>Dolly Varden Mines Ltd.</u>                                  |                  |                    |          |                                |
| 8490  | Kitsault River   | Alice Arm          | H        | 1,200                          |

TABLE II (continued)

- 5 -

| Hydro Plant<br>Code No.                            | Name of Plant        | Locality      | Type <sup>(1)</sup> | Nameplate<br>Capacity<br>in Kw |
|--|----------------------|---------------|---------------------|--------------------------------|
| <u>PRIVATELY OWNED - INDUSTRIAL (continued)</u>    |                      |               |                     |                                |
| <u>Eagle Lake Sawmills Company Ltd.</u>            |                      |               |                     |                                |
|  |                      | Giscome       | S                   | 1,500                          |
|  |                      | Giscome       | D                   | 300                            |
| <u>Elk Falls Company Ltd.</u>                      |                      |               |                     |                                |
|  |                      | Duncan Bay    | S                   | 1,600                          |
| <u>Evans Coleman Evans</u>                         |                      |               |                     |                                |
| 4220   | Munro Creek          | Port Moody    | H                   | 375                            |
| <u>Giant Mascot Mines Ltd.</u>                     |                      |               |                     |                                |
| 5520   | Silverhope-Steelhead | Hope          | H                   | 100                            |
| <u>Hillcrest Lumbet Company Ltd.</u>               |                      |               |                     |                                |
|  |                      | Mesachie Lake | S                   | 2,610                          |
| <u>MacMillan Bloedel and Powell River Ltd. (5)</u> |                      |               |                     |                                |
| 8930   | Powell River         | Powell River  | H                   | 21,350                         |
| 9400   | Stillwater           | Powell River  | H                   | 32,400                         |
| -  |                      | Powell River  | S                   | 18,200                         |
|  |                      | Vancouver     | S                   | 6,250                          |
|  |                      | Chemainus     | S                   | 3,750                          |
|  |                      | Port Alberni  | S                   | 27,000                         |
|  |                      | Harmac        | S                   | 36,930                         |
| <u>Rayonier Canada Ltd.</u>                        |                      |               |                     |                                |
| 880  | Port Alice           | Port Alice    | H                   | 2,000                          |
| 9780   | Woodfibre            | Squamish      | H                   | 2,250                          |
|  |                      | Port Alice    | G                   | 16,200                         |
|  |                      | Woodfibre     | S                   | 7,000                          |
| <u>S.M. Simpson Limited</u>                        |                      |               |                     |                                |
|  |                      | Kelowna       | S                   | 3,250                          |

- NOTES: (1) Type of plant: H = Hydro; D = Diesel; G = Gas diesel;  
T = Gas turbine; S = Steam.
- (2) Head conditions normally only permit 25,000 Kw of capacity at Jordan River
- (3) Used for stand-by or peaking
- (4) Two units (see text)
- (5) Also hydro-mechanical power development - see Table IV

SUMMARY - TOTAL BY OWNERS

|   | <u>Kilowatts</u> |
|---|------------------|
| B.C. Hydro and Power Authority - Hydro Plants .....   | 1,294,802        |
| B.C. Hydro and Power Authority - Thermal Plants ..... | 571,444          |
| The Corporation of the City of Nelson .....           | 8,760            |
| The Corporation of the City of Revelstoke .....       | 6,900            |
| The Village of Kaslo .....                            | 212              |
| East Kootenay Power Company Ltd. ....                 | 13,600           |
| Mirror Lake Power Ltd. ....                           | 150              |
| Northern B.C. Power Co. Ltd. ....                     | 14,664           |
| West Kootenay Power and Light Co. Ltd. ....           | 42,280           |
| Aluminum Co. of Canada Ltd. ....                      | 715,200          |
| Anaconda Co. (Canada) Ltd. ....                       | 6,150            |
| Bralorne Pioneer Mines .....                          | 1,475            |
| B.C. Forest Products Ltd. ....                        | 12,800           |
| B.C. Bridge & Dredging Co. Ltd. ....                  | 2,272            |
| B.C. Sugar Refining Co. Ltd. ....                     | 3,750            |
| Canadian Fishing Co. Ltd. ....                        | 450              |
| Canadian Forest Products Ltd. ....                    | 15,000           |
| Cariboo Gold Quartz Mining Co. Ltd. ....              | 1,875            |
| Carnegie Mining Corporation .....                     | 200              |
| Columbia Cellulose of Canada Ltd. ....                | 15,000           |
| Consolidated Mining & Smelting Co. of Canada .....    | 500,735          |
| Crown Zellerbach Ltd. ....                            | 27,820           |
| Crown Zellerbach Building Materials Ltd .....         | 12,500           |
| Dolly Varden Mines Ltd. ....                          | 1,200            |
| Eagle Lake Sawmills Co. Ltd. ....                     | 1,800            |
| Elk Falls Co. Ltd. ....                               | 1,600            |
| Evans Coleman Evans .....                             | 375              |
| Giant Mascot Mines Ltd. ....                          | 100              |
| Hillcrest Lumber Co. Ltd. ....                        | 2,610            |
| MacMillan Bloedel and Powell River Ltd. ....          | 145,880          |
| Rayonier Canada Ltd. ....                             | 27,450           |
| S.M. Simpson Ltd. ....                                | 3,250            |
| <hr/>   |                  |
| Total for BRITISH COLUMBIA .....                      | Kw. 3,452,304    |

TABLE III

ADDITIONS TO PRINCIPAL ELECTRICAL GENERATING PLANTS  
OF BRITISH COLUMBIA DURING THE TEN-YEAR PERIOD 1954-1963

| Year (1) | Plant              | Capacity added<br>(Kw) | Details                   |
|----------|--------------------|------------------------|---------------------------|
| 1954     | Puntledge          | 20,000                 | Rebuilt (total 27,000 Kw) |
|          | Kemano             | 303,080                | First three units         |
| 1955     | Spillimacheen      | 4,000                  | Three units (2)           |
| 1956     | Ladore Falls       | 27,000                 | First unit                |
|          | Seton              | 42,000                 | New plant                 |
|          | Whatshan           | 11,250                 | Third unit                |
|          | Kemano             | 202,060                | Fourth and fifth units    |
| 1957     | Ladore Falls       | 27,000                 | Second unit               |
|          | Cheakamus          | 140,000                | New plant                 |
|          | La Joie            | 22,000                 | One unit (3)              |
|          | Kemano             | 101,030                | Sixth unit                |
| 1958     | Clowhom            | 27,000                 | Rebuilt (tot.30,000 Kw)   |
|          | Strathcona         | 33,750                 | New plant                 |
|          | Kemano             | 101,030                | Seventh unit              |
|          | Georgia (thermal)  | 37,000                 | First two units           |
| 1959     | Ash River          | 25,200                 | New plant                 |
|          | Port Mann(thermal) | 100,000                |                           |
|          | Bridge River No. 2 | 124,000                | First two units           |
|          | Georgia (thermal)  | 38,500                 | Third and fourth units    |
| 1960     | Bridge River No. 2 | 124,000                | Third and fourth units    |
|          | Walter Hardman     | 4,000                  | First unit                |
|          | Big Falls          | 3,900                  | Second unit               |
| 1961     | Clayton            | 702                    | New plant                 |
| 1962     | Burrard (thermal)  | 300,000                | First two units           |
|          | Raging River       | 1,760                  | Rebuilt                   |
| 1963     | Waneta             | 90,000                 | Third unit                |

- (1) Year of commencement of operation, or availability for operation.  
(2) Two reconditioned units of 900 Kw. from old Barriere plant, and one new unit of 2,200 Kw.  
(3) Added to existing storage dam.

TABLE IV

OPERATING HYDRO-MECHANICAL POWER PLANTS IN BRITISH COLUMBIA

| Hydro Plant<br>Code No.                     | Name of Plant     | Locality        | Installation in Hp |
|---|-------------------|-----------------|--------------------|
| <u>Anaconda Co. Canada Ltd.</u>             |                   |                 |                    |
| 9460  | Tunnel Powerhouse | Brittania Beach | 1,100              |
| <u>Consolidated Mining and Smelting Co.</u> |                   |                 |                    |
| 5940  | Sullivan          |                 | 360                |
| <u>Crown Zellerbach Ltd.</u>                |                   |                 |                    |
| 8820  | Ocean Falls       |                 | 12,600             |
| <u>James J. Donaldson</u>                   |                   |                 |                    |
| 2720  | Georgetown Creek  |                 | 230                |
| <u>MacMillan Bloedel &amp; Powell River</u> |                   |                 |                    |
| 8930  | Powell River      |                 | 26,760             |
| <u>Canadian Fishing Co. Ltd.</u>            |                   |                 |                    |
| 1660  | Butedale Creek    |                 | 245                |
| <u>Carnegie Mining Corporation</u>          |                   |                 |                    |
| 5640  | Slocan Star Plant | New Denver      | 100                |
| <u>Total for BRITISH COLUMBIA</u>           |                   |                 | <u>Hp 41,395</u>   |

TABLE V

SUMMARY OF UNDEVELOPED POWER-SITES IN BRITISH COLUMBIA  
(7,500 KILOWATTS AND OVER)

| A r e a                               | Prime Power<br>(Kw.) |
|---------------------------------------|----------------------|
| Vancouver Island .....                | 138,900              |
| Lower Coastal ... ..                  | 240,100              |
| Interior-Coastal                      |                      |
| (a) Homathko-Chilko scheme .....      | 1,019,000            |
| (b) Nechako-Kitimat development ..... | <u>600,000</u>       |
|                                       | 1,619,000            |
| Fraser River below Lytton .....       | 2,009,200            |
| Fraser River above Lytton             |                      |
| (a) Thompson River .....              | 645,600              |
| (b) Mid and Upper Fraser .....        | <u>3,604,100</u>     |
|                                       | 4,249,700            |
| Columbia River .....                  | 2,522,600            |
| West Coast -                          |                      |
| (a) Dean-Kliniklini .....             | 158,200              |
| (b) Skeena-Rupert .....               | 1,389,600            |
| (c) Nass .....                        | <u>356,600</u>       |
|                                       | 1,904,400            |
| Northern British Columbia             |                      |
| (a) Peace River .....                 | 2,507,400            |
| (b) Liard River .....                 | 2,375,000            |
| (c) Stikine River .....               | 960,000              |
| (d) Yukon-Teslin-Taku .....           | <u>3,654,000</u>     |
|                                       | 9,496,400            |
| <u>TOTAL, BRITISH COLUMBIA</u>        | <u>22,180,300</u> *) |

\*) Approximately equivalent to 29,700,000 horse-power.