

DEPARTMENT OF STATE
Washington

69-1

May 22, 1954

The International Joint Commission
Washington, D.C., United States of America; and
Ottawa, Ontario, Canada.

Sirs:

1. The Government of the United States hereby submits to the International Joint Commission, under the provisions of Article IV of the Treaty of January 11, 1909, between the United States and Great Britain, this application requesting that the Commission give consideration to such effects as the construction and operation of a dam and reservoir, herein referred to as "Libby Dam", on the Kootenai*River near Libby, Montana, may have on levels or stages of the said Kootenai River at and above the international boundary between the United States of America and Canada, and the consequences thereof; and that the Commission enter an appropriate order in the premises, expressly approving the construction and operation of the said Libby Dam and reservoir.

2. On January 12, 1951 an application was forwarded to the International Joint Commission relating to a similar project on the Kootenai*River near Libby, Montana. Hearings on this application were held by the Commission and the possibility of proceeding with that project received very careful consideration by the Commission. On account of domestic questions which arose the application was withdrawn from the Commission on April 8, 1953 in order that they might be settled in regular channels without being intermingled with the international aspects of the problem.

3. Under the Flood Control Act of 1950 (Public Law 516, 81st Congress, 2d Session), approved 17 May 1950, a project designated as "Libby Dam Kootenai River, Montana" was "adopted and authorized to be prosecuted under the direction of the Secretary of the Army and the supervision of the Chief of Engineers." Attached hereto and marked Annex A is a statement, received by the Secretary of State with a letter dated May 5, 1954 from the Secretary of the Army, containing "data on Libby project to accompany 1954 application to the International Joint Commission." The Secretary of the Army has requested the Department of State to present it with this application to your Commission.

* Spelled Kootenai in the United States, Kootenay in Canada.

4. Particular attention is invited to the following important aspects of this Libby Dam Project:

a. The Committee on Commerce of the United States Senate on September 24, 1943 adopted a resolution which reads in part as follows:

"Resolved by the Committee on Commerce of the United States Senate, That the Board of Engineers for Rivers and Harbors, created under Section 3 of the River and Harbor Act, approved June 13, 1902, be, and is hereby requested to review the reports on Columbia River and Tributaries submitted under the provisions of House Document Numbered 308, Sixty-ninth Congress, first session, as authorized by the River and Harbor Act of January 21, 1927, with a view to determining whether any modification of existing projects or recommended comprehensive plans of improvement should be made at this time."

b. Pursuant to this authorization the United States proposed that the cooperation of the Government of Canada in comprehensive studies of the Columbia River Basin be obtained through a reference to the International Joint Commission under Article IX of the Boundary Waters Treaty of 1909. The reference to this Commission by the two Governments under date of March 9, 1944 resulted and exhaustive studies of the Columbia River Basin were made by the International Columbia River Engineering Board.

c. On November 1, 1950, the International Columbia River Engineering Board submitted to your Commission a report entitled: "Interim Report on Kootenay River". The report contained the following recommendation:

"In view of the foregoing and of the reference directive the Board recommends that the normal forebay elevation of 2,459 feet above mean sea level be approved for the Libby project..."

d. The reservoir would be approximately 95 miles long and from one-half to one and one-half miles wide. It would extend 42 miles into Canada approximately to the Bull River dam site, which is about 5 miles upstream from Wardner, British Columbia. With a full Libby reservoir the depth of water at the international boundary would be 150 feet. The reservoir will occupy approximately 47,800 acres, of which 17,600 acres are in Canada. In the Canadian portion, the reservoir would flood a few small communities and farms, and some secondary roads. In addition, it would necessitate the raising of the Canadian Pacific Railway Crows Nest line and No. 3 highway for short distances. The reservoir would have a gross storage capacity of 5,985,000 acre-feet, of which approximately 1,000,000 acre-feet would be in Canada. The usable storage capacity at 50 per cent drawdown (172 feet) would be 5,010,000 acre-feet, of which 1,000,000 acre-feet would be in Canada.

e. The Dam as currently planned would be a straight concrete gravity structure rising about 410 feet above bed rock. It would be about 2,700 feet long at the top and 1,200 feet long at the base. The head provided for hydroelectric development at the site would be 344 feet at normal full pool elevation. An overflow spillway in line with the existing river channel, equipped with gates, would have a capacity of 280,000 cubic feet per second. For flood control operation of the dam a sufficient number of sluices would be provided to permit, when combined with the flow through three of the powerhouse units, a total release of 60,000 cubic feet per second when the power pool is fully drawn down.

f. The powerhouse would be located at the downstream toe of the dam near the left abutment. The initial installation would consist of six generating units rated at 100,000 kilowatts each, or a total of 600,000 kilowatts. The ultimate installation would consist of eight such units, or a total installation of 800,000 kilowatts.

g. The estimated cost of construction is \$263,321,000 of which approximately \$7,020,000 is the estimated cost of providing the portion of the reservoir in Canada, and approximately \$256,301,000 is the cost of the dam and the portion of the reservoir in the United States.

h. The project would provide much needed flood control and power benefits in both Canada and the United States. 1/

5. Accordingly, the Government of the United States asks that the International Joint Commission approve the construction of the Libby Dam and the proposed method of operation of the dam and reservoir to elevation 2,459 feet above mean sea level. It is requested that the Commission, in accordance with Article VIII of the Treaty of January 11, 1909, make its order of approval conditional upon suitable and adequate provision being made for the protection and indemnity of all interests on the Canadian side of the boundary which may be injured thereby in accordance with the practice of the Commission in similar cases in which it has approved applications of this character.

6. This communication will, it is believed, be found by the Commission to contain all essential averments regarding the facts upon which this application is based and the nature of the order of approval desired, and to be in conformity with the provisions of Paragraph (a) of Rule 6 and with Rule 7 of the Commission's Rules of Procedure.

7. In submitting this application to the Commission, the hope is expressed, on behalf of the United States, that in view of the importance of the matters involved, the Commission will expedite its consideration thereof and its action thereon in order that the project works and the plan of operation thereof may receive the approval of the Commission with the least possible delay.

8. Attached to Annex A of this application and made a part thereof are the maps and drawings showing the situation and extent of the project works.

The required additional copies of the application are being forwarded to you under separate cover.

Very truly yours,

(signed) John Foster Dulles

John Foster Dulles

Enclosure:

Annex A

611.42321 L1/5-554

ANNEX A

DEPARTMENT OF THE ARMY
Office of the Chief of Engineers
Washington

DATA ON LIBBY PROJECT

TO ACCOMPANY 1954 APPLICATION TO THE INTERNATIONAL JOINT COMMISSION

On 1 December 1950, the Chief of Engineers submitted an application to the Secretary of State requesting approval by the International Joint Commission of the construction and operation of a dam and reservoir on the Kootenai (1) River near Libby, Montana. This application was forwarded to the International Joint Commission on 12 January 1951. The Secretary of the Army on 6 April 1953 requested the Secretary of State to withdraw the application so that domestic questions involved could be settled in regular channels without being intermingled with the international aspects of the problem. The application was withdrawn on 8 April 1953.

The Chief of Engineers, as the designated official of the Government of the United States, authorized, under the direction of the Secretary of the Army, to construct and operate a dam and reservoir on the Kootenai River near Libby, Montana, hereby resubmits the necessary project data to accompany an application under the provisions of Article IV of the Treaty of 11 January 1909 (Boundary Waters Treaty) between the United States and Great Britain, requesting approval by the International Joint Commission of the construction and operation of said dam and reservoir described and referred to hereinafter as the Libby project.

Events Leading to the Proposal for Construction of the Libby Project

The studies, investigations, and surveys of the Kootenai River leading to authorization of the Libby project in the United States were carried out by the Corps of Engineers, Department of the Army, as a part of a comprehensive study of the entire Columbia River Basin in the United States under authority contained in a resolution of the Committee on Commerce, United States Senate, adopted on 24 September 1943 which reads in part as follows:

"Resolved by the Committee on Commerce of the United States Senate, That the Board of Engineers for Rivers and Harbors, created under Section 3 of the River and Harbor Act, approved June 13, 1902, be, and is hereby requested to review the reports on Columbia River and Tributaries submitted under the provisions of House Document Numbered 308, Sixty-ninth Congress, first session, as authorized by the River and Harbor Act of January 21, 1927, with a view to determining whether any modification of existing projects or recommended comprehensive plans of improvement should be made at this time."

(1) Spelled Kootenai in the United States, Kootenay in Canada

In the initial phases of this Columbia River study, the Corps of Engineers, recognizing that a comprehensive plan for development of the water resources of the Columbia River Basin in the United States should include consideration of prospective developments in the Columbia River Basin in Canada and the interrelation of possible developments on each side of the boundary, proposed that the cooperation of the Government of Canada in comprehensive studies of the Columbia River Basin be sought through a reference to the International Joint Commission under Article IX of the Boundary Waters Treaty of 1909:

The Government of Canada accepted the request of the United States for such study and on 9 March 1944 the two Governments submitted the following reference to the International Joint Commission:

1. "In order to determine whether a greater use than is now being made of the waters of the Columbia River system would be feasible and advantageous, the Governments of the United States and Canada have agreed to refer the matter to the International Joint Commission for investigation and report pursuant to Article IX of the Convention concerning the Boundary Waters between the United States and Canada, signed January 11, 1909.
2. "It is desired that the Commission shall determine whether in its judgment further development of the water resources of the river basin would be practicable and in the public interest from the points of view of the two Governments, having in mind (A) domestic water supply and sanitation, (B) navigation, (C) efficient development of water power, (D) the control of floods, (E) the needs of irrigation, (F) reclamation of wet lands, (G) conservation of fish and wildlife, and (H) other beneficial public purposes.
3. "In the event that the Commission should find that further works or projects would be feasible and desirable for one or more of the purposes indicated above, it should indicate how the interests on either side of the boundary would be benefited or adversely affected thereby, and should estimate the costs of such works or projects, including indemnification for damage to public and private property and the costs of any remedial works that may be found to be necessary, and should indicate how the costs of any projects and the amounts of any resulting damage be apportioned between the two Governments.
4. "The Commission should also investigate and report on existing dams, hydroelectric plants and navigation works and other works or projects located within the Columbia river system in so far as such investigation and report may be germane to the subject under consideration.

5. "In the conduct of its investigation and otherwise in the performance of its duties under this reference, the Commission may utilize the services of engineers and other specially qualified personnel of the technical agencies of Canada and the United States and will so far as possible make use of information and technical data heretofore acquired by such technical agencies or which may become available during the course of the investigation, thus avoiding duplication of effort and unnecessary expense."

Pursuant to paragraph 5 of the foregoing reference, the International Joint Commission on 4 April 1944 appointed the International Columbia River Engineering Board composed of representatives of the Corps of Engineers and the United States Geological Survey for the United States, and of the Department of Resources and Development (then the Department of Mines and Resources), and the Department of Public Works for Canada, to assist the Commission in carrying out the terms of the reference.

The Board, at its first meeting held in Spokane, Washington, on 31 July 1944, appointed the International Columbia River Engineering Committee, composed of regional representatives of governmental agencies concerned with water resources development in the Columbia River area, to make the necessary field investigations and studies. As the Committee's studies progressed, it became apparent that several storage sites on the Kootenai River in Canada and the United States, including the Libby project, had sufficiently favorable possibilities to warrant further study and consideration as part of a comprehensive long-range program for utilizing the water resources of the Columbia River Basin.

Meanwhile, the studies of the Columbia River Basin in the United States under the Congressional authority previously cited were compiled into a report entitled "Columbia River and Tributaries, Northwestern United States" which was printed as House Document No. 531, 81st Congress, 2nd Session. The report recommended authorization for construction of a number of multiple-purpose projects, which in combination with the then existing and authorized projects would be operated and coordinated as a system for the purposes of controlling floods, providing irrigation facilities, improving inland navigation, generating power, and for other miscellaneous uses. The Libby project on the Kootenai River is one of the major elements of the recommended plan. Cognizance was taken in the report of the fact that, in addition to authorization by Congress approval of the International Joint Commission would be required to permit construction of the Libby project. Cognizance was also taken of the interrelationship of Libby and possible projects in the Canadian portion of the Kootenai River basin.

As noted further below, the international studies had progressed sufficiently to warrant the conclusions that a project at the Libby site would fit in with a comprehensive plan and could be adopted by Congress as an authorized project, after which the approved pool elevation and allocation of costs and indemnification of damages as between interests in the United States and Canada could be determined as required under Article IV of the Boundary Waters Treaty of 1909.

As a result of consideration by Congress of the foregoing report, authorization for construction of the Libby project, together with other major elements of the comprehensive plan for the Columbia Basin was given to the Corps of Engineers in the River and Harbor and Flood Control Act which was approved by the President on 17 May 1950 (Public Law 516 - 81st Congress, 2nd Session).

Concurrently with the Corps of Engineers' studies in the United States which led to the authorization of the comprehensive plan of development in the United States, the international studies under the terms of the Columbia River Reference were also proceeding. The International Columbia River Engineering Board and Committee were informed by the Corps of Engineers' representatives early in 1948 that the Libby project was the most desirable of those being considered on the Kootenai in the United States. At the 12 and 13 July 1948 meeting of the International Columbia River Engineering Board, following considerable discussion of the Kootenai River problems in general, and of the Libby project in particular, the Board prepared the following statement for presentation to the International Joint Commission at its 27 July 1948 hearing in Bonners Ferry, Idaho:

"The recent floods throughout the Columbia River Basin have emphasized again the urgent need for permanent flood control measures.

"In its consideration of the flood problem the Board has concluded that effective and economic control of Kootenay River floods will require the development of storage in combination with other water uses.

"The Board's studies to date have indicated that there are several storage sites on the Kootenay River in Canada and in the United States which may prove feasible as part of the comprehensive long-range development of the water resources of the Columbia basin. Studies on these sites both in Canada and the United States are continuing and will be reported to the International Joint Commission when completed.

"On the basis of the investigations already made the Board considers that study of the possibilities

of one of the projects, namely, a high dam at the Libby site as currently proposed by the Corps of Engineers, has advanced sufficiently to determine that this project is a desirable initial step towards a comprehensive plan for accomplishment of the desired purposes of flood control and other water uses.

"The Board believes that the Libby Project can be adopted at this time subject to later adjustment of the reservoir pool elevation to fit in with any additional projects upstream in Canada, and subject to determination of the appropriate allocation of cost and indemnification of damages as between interests in Canada and the United States. As a result of its continuing studies, this Board will submit data and recommendations to the International Joint Commission to serve as a basis for these determinations.

"The Libby project will, in combination with dikes, provide a higher degree of flood protection on the lower Kootenay River in Canada and the United States; will contribute materially to control of floods on the main stem of the Columbia River; will facilitate development of additional agricultural lands; will benefit existing and future downstream power installations in both countries; and will fit in with other projects which may be developed on the Kootenay as a result of the continuing studies of possible additional sites in Canada and the United States."

The 27 July 1948 hearing of the International Joint Commission at Bonners Ferry, Idaho, following the disastrous Columbia Basin flood of June 1948, was called to obtain the views of interested parties on possible solutions of the flood problems in the various States and in British Columbia. The North Pacific Division Engineer and the Seattle District Engineer of the United States Corps of Engineers outlined the flood problems in the United States, both on the Kootenai and the lower Columbia, and described the Libby project, as then proposed, including its expected accomplishments in controlling floods, in providing additional power in the Pacific Northwest and in creating benefits of other kinds. The representative of the Department of Mines and Resources, Canada (now the Department of Resources and Development), who was also the Chairman of the Canadian Section of the International Columbia River Engineering Board, presented the statement of the Board (see foregoing paragraph), outlined the investigations and studies that were then underway on the upper Kootenai, and named the dam and reservoir sites in Canada wherein storage for the control of floods and the generation of power also might be accomplished.

The Governor of the State of Idaho, the representatives of the Governors of other States, and representatives of many governmental agencies and other organizations in both Canada and the United States spoke in favor of storage development on the Kootenai and urged development of the Libby project. The Honorable Byron Johnson, Premier of British Columbia, assured the Commission of his interest in its problems and further assured the Commission that his Government would cooperate in its studies and would give prompt consideration to any Commission matters brought before it. No statements in opposition to the Libby project were offered at this hearing.

Following the Bonners Ferry hearing the investigations and studies of the Kootenai problems continued. By the end of 1949 the Canadian investigations had reduced the number of sites under consideration in Canada to two; the Plumbob site, 28 miles upstream from the International boundary, which would fit with a Libby project having a forebay elevation of 2407 feet; and the Bull River site, 42 miles upstream from the boundary, which would fit with a Libby project having a forebay elevation of 2457.5 feet (later adjusted to 2459 feet). Two possible reservoir forebay elevations for the Libby project were thus determined. Because of the uncertainty at that time regarding the feasibility of projects at the two Canadian sites, it was considered desirable to study a third and higher project for the Libby site. This third alternative for the Libby site would have a forebay elevation of 2510 feet and would back water to Fort Steele, British Columbia.

Early in 1950 the International Columbia River Engineering Board requested the International Columbia River Committee to complete its findings on the Libby project, at the earliest practicable date, in order that the Board might advise the International Joint Commission regarding acceptable forebay elevations. The Board also requested the Committee to study the benefits, costs and other factors which might require adjustments between interests in Canada and the United States and to consider the problems associated with acquisition of flowage rights in the reservoir area in Canada.

During 1950 the foregoing studies were advanced sufficiently to permit completion of a report entitled "Interim Report on Kootenay River," which was adopted by the International Columbia River Engineering Board in October 1950 and submitted to the International Joint Commission on 1 November 1950. It comprises mainly an engineering and economic analyses of the principal water-use development possibilities and has as one of its primary purposes the establishment of an acceptable forebay elevation for the Libby project. The report presents the background of the studies pertaining thereto, descriptions of the streams and basins involved, the problems encountered, the studies made, and descriptions of the projects considered. These include the Plumbob and Bull River

projects in Canada and three variations of the Libby project. The various alternative plans of development, including the combination of Plumbob and Libby (2407), and the combination of Bull River and Libby (2459) are analyzed and all data entering into these analyses are summarized in the report.

The analyses presented in the report led to the conclusion that, all things considered, the Bull River-Libby combination of projects would best develop the portion of the Kootenay under consideration.

The report contained the following recommendation:

"In view of the foregoing and of the reference directive, the Board recommends that the normal forebay elevation of 2459 feet above mean sea level be approved for the Libby project and that the Bull River project be an element of the comprehensive plan of development."

Subsequent to the foregoing studies by the Board, the Corps of Engineers, as part of the regular established procedures for planning work after project authorization, has investigated the general vicinity contemplated for the proposed project to determine the best possible axis of the dam. Many alternative locations both above and below the site tentatively selected in the project report (House Document 531, 81st Congress, 2nd session), were examined and the advantages and disadvantages of each location were evaluated. It was determined from the standpoint of complete utilization of the power resources that a site 8 miles below the report site was the most favorable. This site was, however, opposed by several companies who owned and operated roads, railroads and industrial facilities in the vicinity. This purely domestic problem became involved in determining the site for the dam and resulted in the withdrawal of the application as mentioned in opening paragraph.

Since withdrawal of the application, engineering studies have determined that location of the dam about 4 miles upstream from the report site would be favorable and economical, and would overcome the objections previously voiced by the affected companies.

Description of the Libby Project

The Libby dam site is located about fifteen miles upstream from Libby, Montana, at river mile 217. At this site and for a great proportion of the length of the proposed reservoir, Kootenai River flows in a deep U-shaped rock-walled canyon.

A project at this site, constructed to the forebay elevation of 2459, as recommended by the International Columbia River Engineering Board, would create a reservoir

approximately 95 miles long and from one-half to one and one-half miles wide (See Exhibit B). The reservoir would extend 42 miles into Canada to the tailwater of the Bull River dam site, which is about 5 miles upstream from Wardner, British Columbia (See Exhibit C). With a full Libby reservoir the depth of water at the international boundary would be 150 feet. The reservoir will occupy approximately 47,800 acres, of which 17,600 acres are in Canada. Improvements in the United States portion of the reservoir are a transcontinental railroad, a State highway, a few logging communities, and a few farms. In the Canadian portion, the reservoir would flood a few small communities and farms, and some secondary roads. In addition, it would necessitate the raising of the Canadian Pacific Railway Crows Nest line and No. 3 highway for short distances. The reservoir would have a gross storage capacity of 5,985,000 acre-feet, of which approximately 1,000,000 acre-feet would be in Canada. The usable storage capacity at 50 percent drawdown (172 feet) would be 5,010,000 acre-feet of which 1,000,000 acre-feet would be in Canada.

The dam as currently planned would be a straight concrete gravity structure rising about 410 feet above bed rock (See Exhibit D). It would be about 2700 feet long at the top and 1200 feet long at the base. Three saddled dams on the east bank with a total length of 3200 feet would be necessary. Studies of alternative designs, including a rock-fill dam structure, are being made as part of the determination of the most economical plan of development for the site. The head provided for hydroelectric development at the site would be 344 feet at normal full pool elevation. An overflow spillway in line with the existing river channel, equipped with gates, would have a capacity of 280,000 cubic feet per second. For flood control operation of the dam a sufficient number of sluices would be provided to permit, when combined with the flow through three of the powerhouse units, a total release of 60,000 cubic feet per second when the power pool is fully drawn down.

The powerhouse would be located at the downstream toe of the dam near the left abutment. The initial installation would consist of six generating units rated at 100,000 kilowatts each, or a total of 600,000 kilowatts. The ultimate installation would consist of eight such units, or a total installation of 800,000 kilowatts.

The estimated construction cost of the Libby project to elevation 2459 feet, based on data obtained by the Corps of Engineers in the United States and by the appropriate agencies in Canada is \$263,321,000, of which approximately \$7,020,000 is the estimated cost of providing the portion of the reservoir in Canada, and approximately \$256,301,000 is the cost of the dam and the portion of the reservoir in the United States.

The Libby project will provide flood control and power benefits primarily; navigation, recreation, irrigation, and conservation benefits incidentally. Flood control and power operation of the project would fit together very well. Floods of damaging proportions occur on the

Kootenai in May and June only and flood control storage is necessary only at that time. Operation of the project for controlling floods would be based on the plan that the entire usable storage space would be made available for this purpose if required. Storage withdrawals during winter months to meet normal power requirements would make a part of all of this space available before the flood runoff starts. In case the power requirements did not result in complete evacuation of the storage space, and runoff forecasts indicated a need for the total space, the reservoir would be further drawn down by means of the sluices provided for that purpose. On the basis of recent studies, the estimated peak flow of the 1894 flood, the largest known, amounting to 160,000 cubic feet per second at Bonners Ferry, would be reduced to 52,000 cubic feet per second by operation of this project. Flood damage begins in the Bonners Ferry area at 60,000 cubic feet per second. Besides providing almost complete flood protection along the Kootenai upstream from Kootenai Lake, the Libby project would contribute materially to the control of floods on the main stem of Columbia River. Flood control benefits from the project are estimated to be \$1,598,000 annually in the United States and at least \$30,000 annually in Canada. The estimate of flood control benefits in Canada is confined to estimated reduction in pumping and maintenance costs in the existing diked areas and is based on an assumption, by Canadian authorities, that the existing dikes give essentially complete flood protection. Benefits of navigation and recreation in the United States are estimated to total \$91,000 annually.

The predominant benefit to be realized from the Libby project is the hydroelectric power that will be made available in the Pacific Northwest. Studies of the power potentialities of this project if first-added to the Columbia River power system, which includes the Hungry Horse, Albeni Falls, Grand Coulee, Chief Joseph, McNary, The Dalles, and Bonneville projects on the Columbia, indicate that the system prime capability in the United States would be increased by 805,000 kilowatts. The estimated average annual value of this added power is \$19,164,000. The increase in the nominal prime capability at the Canadian plants along the lower Kootenay that would be made possible by this project would be 90,000 Kilowatts after adding an additional unit at each of the Lower Bonnington and Brilliant plants. This increase has an estimated average annual value of \$3,300,000. A greater increase would be possible by more extensive redevelopment.

The total of the estimated average annual benefits in Canada and the United States is \$24,183,000. In addition the intangible and unevaluated benefits would be considerable.

In summary, the effects of the Libby project in Canada which are particularly pertinent to consideration of this application are that the water surface at the international boundary would be raised approximately 150 feet and the

reservoir pool would extend into Canada some 42 miles, inundating 17,600 acres of Canadian land, displacing the population of a few small communities and farms, and requiring short lengths of a main railway line and highway to be raised. The project would provide benefits in Canada by almost entirely eliminating flood damages along the Kootenay upstream from Kootenay Lake and by making possible at least an increase in power output along the lower Kootenay of 90,000 kilowatts. The amount of benefit in Canada which has been evaluated in monetary terms is \$3,330,000. In addition, the regulation and stabilization of stream flows should provide substantial intangible but unevaluated benefits throughout the affected area.

Attached as part of these data are the following exhibits:

- A. Summary of Data on Libby Project - Pool Elevation 2459 feet.
- B. Libby Project Reservoir Map.
- C. Libby Project Profile.
- D. Libby Project Plan and Section.

In addition, reference is made to the following sources of information which have been previously made available to the International Joint Commission and which have been utilized and taken into account in the preparation of this application:

1. "Water Resources of the Columbia River Basin" - October 1, 1945 - A preliminary report of the International Columbia River Engineering Board to the International Joint Commission under the Columbia River Reference of 9 March 1944.
2. Record of Public Hearing held by the International Joint Commission at Bonners Ferry, Idaho, on 27 July 1948.
3. "Columbia River and Tributaries, Northwestern United States" - House Document No. 581, 81st Congress, 2nd Session.
4. "Kootenay River" - An interim report, dated 1 November 1950, from the International Columbia River Engineering Board to the International Joint Commission under the Columbia River Reference of 9 March 1944.

Pertinent extracts from the foregoing sources have been quoted and made part of this application. It is considered that this submission contains the information necessary

to permit the Commission to reach conclusions as to approval of the Libby project at elevation 2459. It is recognized that additional information will be required to determine suitable and adequate provisions for protection and indemnity of interests in Canada as required under Article VIII of the Boundary Waters Treaty of 1909.

4 Inclosures:
Exhibits A, B.C,
and D

EXHIBIT A

SUMMARY OF DATA ON LIBBY PROJECT - POOL ELEVATION, 2459 FEET
(to accompany application of Chief of Engineers to the
International Joint Commission for authority to
construct Libby project)

Location of dam site:

Upstream from International Boundary at Port Hill, Idaho	114 miles
Upstream from Libby, Montana	15 "
Downstream from International Boundary at Gateway, Montana	53 "
Upstream from mouth of Kootenay	217 "

Stream flow at site: (Drainage area, 8,940 square miles)

Discharge, mean annual (1911-1915 period)	10,700	c.f.s.
Run-off, mean annual (" " ")	7,750,000	ac.ft.
1894 flood peak discharge (estimated)	140,000	c.f.s.
1948 flood peak discharge (")	100,000	c.f.s.
Spillway design flood	280,000	c.f.s.

Hydraulics:

Normal full pool	2,459	feet
Minimum regulated pool elevation	2,287	"
Draw-down (50%)	172	"
Tail-water elevation at mean flow	2,115	"
Head at normal full pool	344	"

Dam:

Concrete gravity type			
Top length	2,700	"	
Base length	1,200	"	
Saddle dams - length	3,200	"	

Powerhouse:

Power characteristics in critical period:

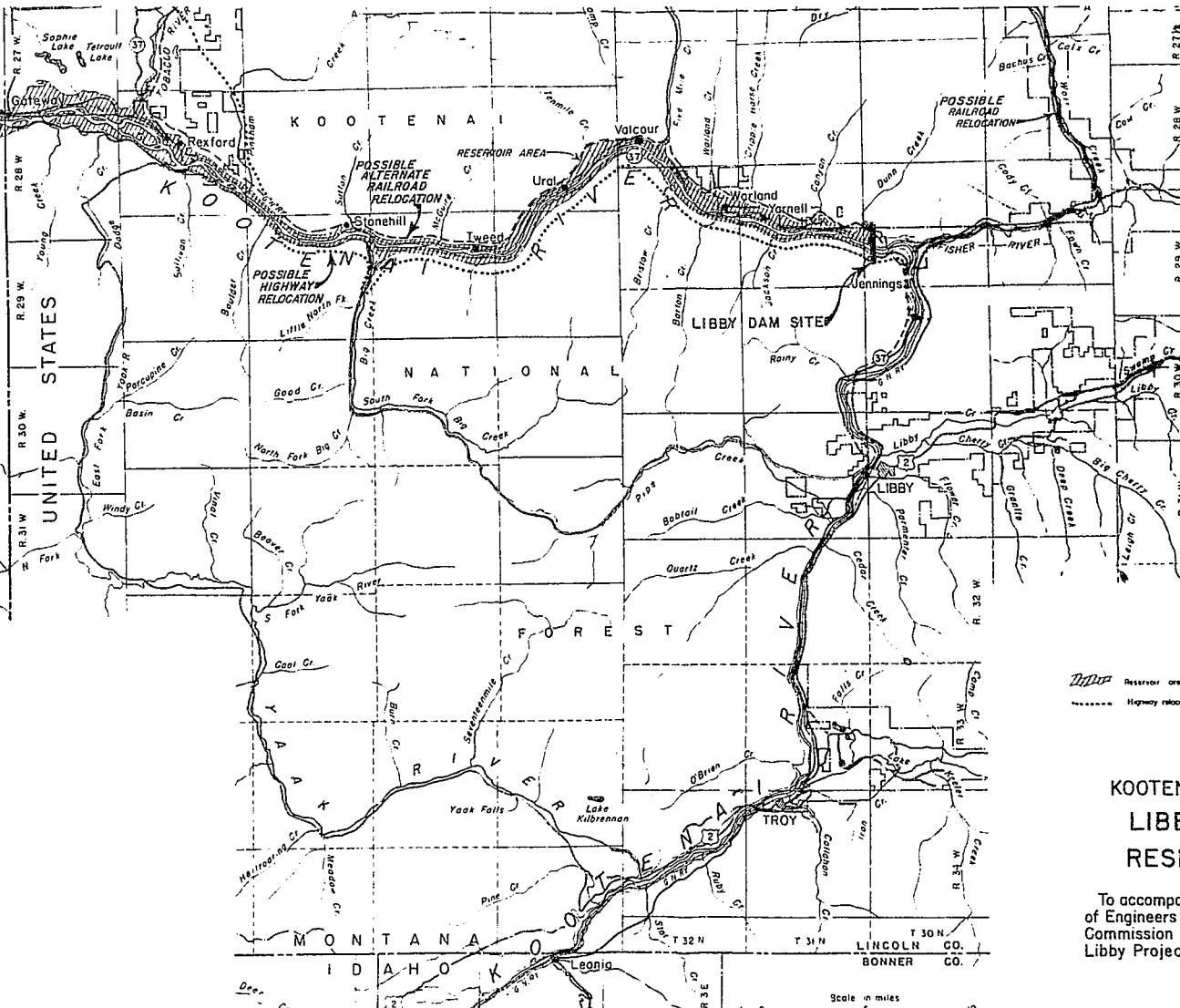
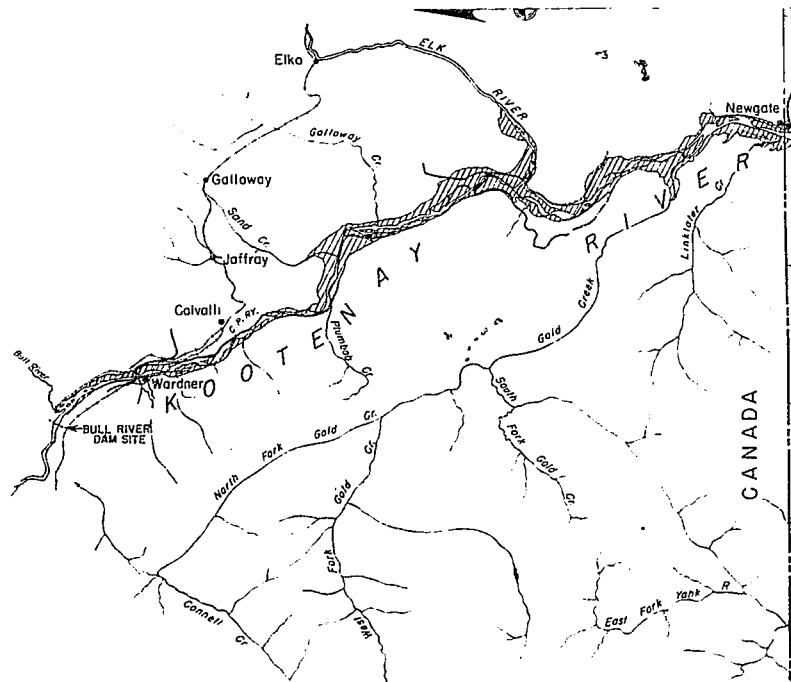
Nominal prime capability at site in system	operation	248,000 kw.
Prime power added to existing system		805,000 kw.

Reservoir:

Gross storage capacity		
United States	4,985,000	ac.ft.
Canada	1,000,000	ac.ft.
Total, United States and Canada ..	5,985,000	ac.ft.
Usable storage capacity - 50% draw-down		
United States	4,010,000	ac.ft.
Canada	1,000,000	ac.ft.
Total, United States and Canada ..	5,010,000	ac.ft.
Length		
United States	53	miles
Canada	42	miles
Total, United States and Canada	95	miles

Area		
United States.....	30,200 acres
Canada.....	17,600 "
Total, United States and Canada		47,800 "
 <u>Total cost of project (July 1953 prices):</u>		
Initial installation	\$263,321,000
Ultimate installation	279,000,000

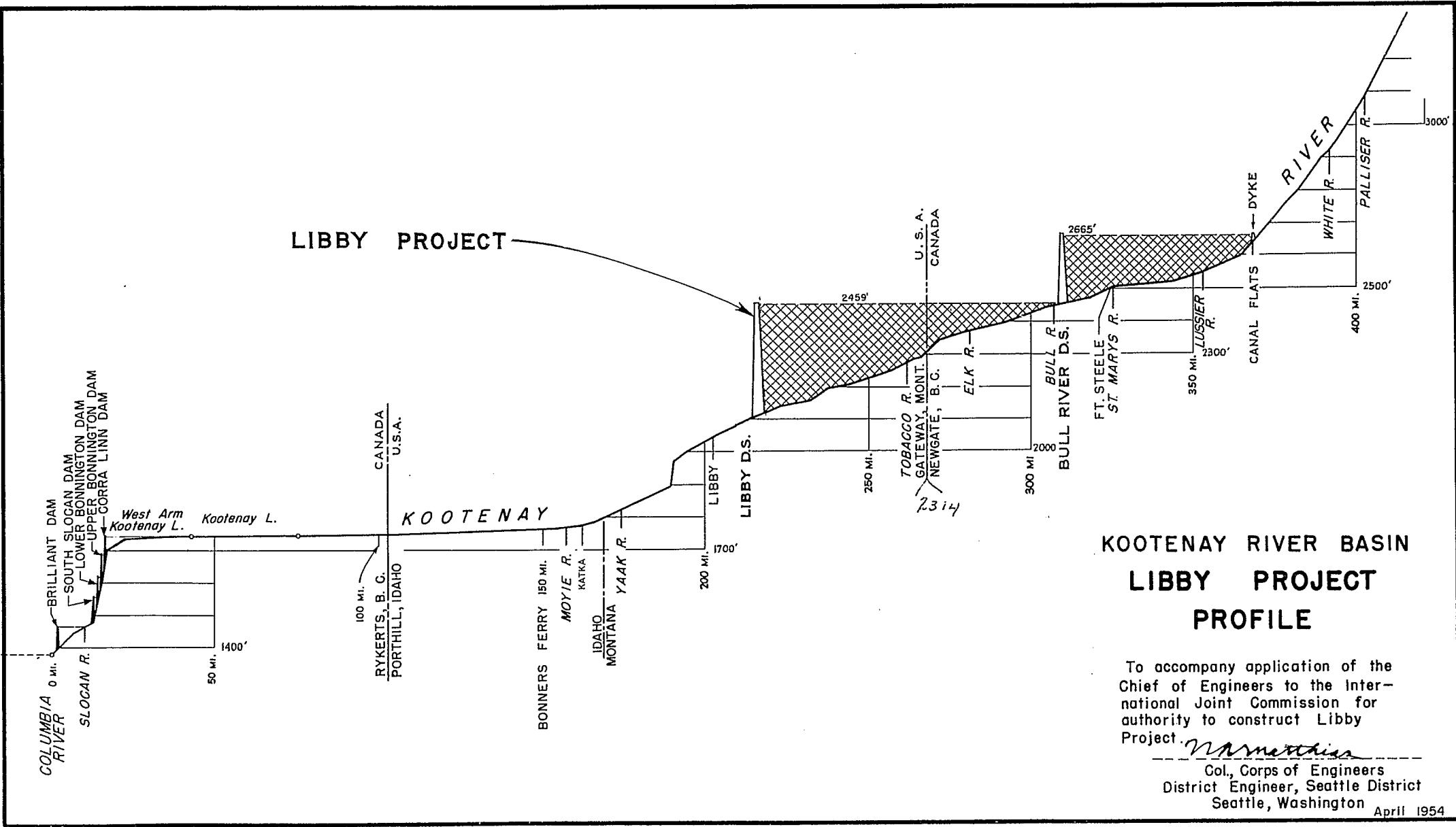
EXHIBIT A

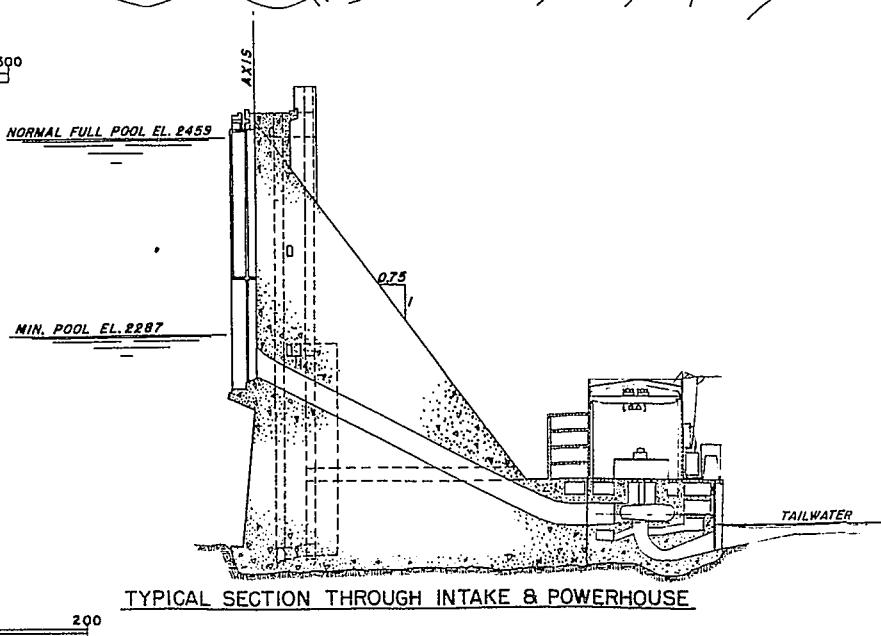
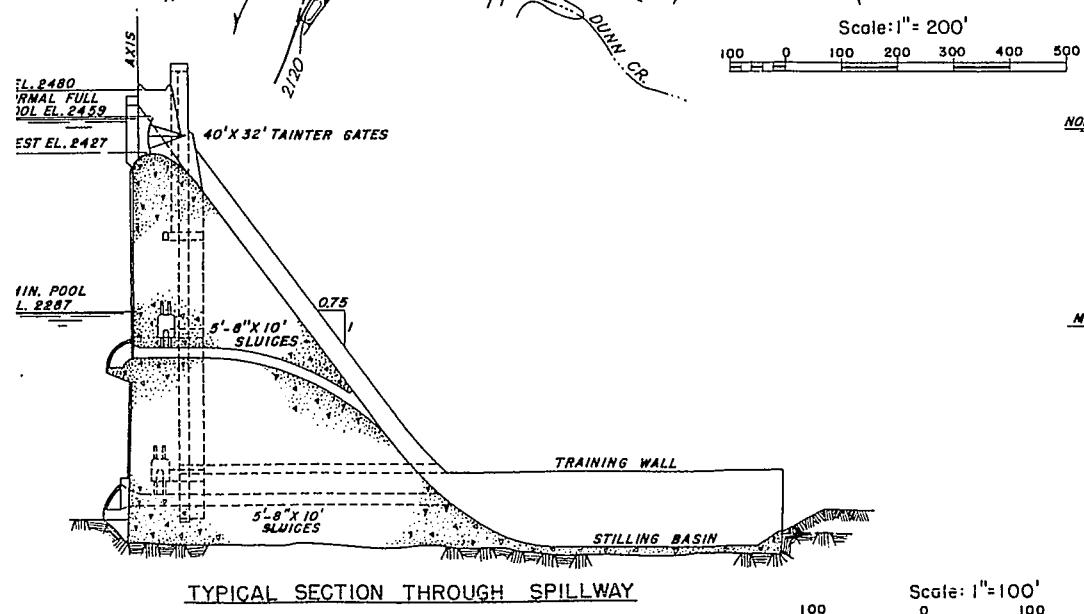
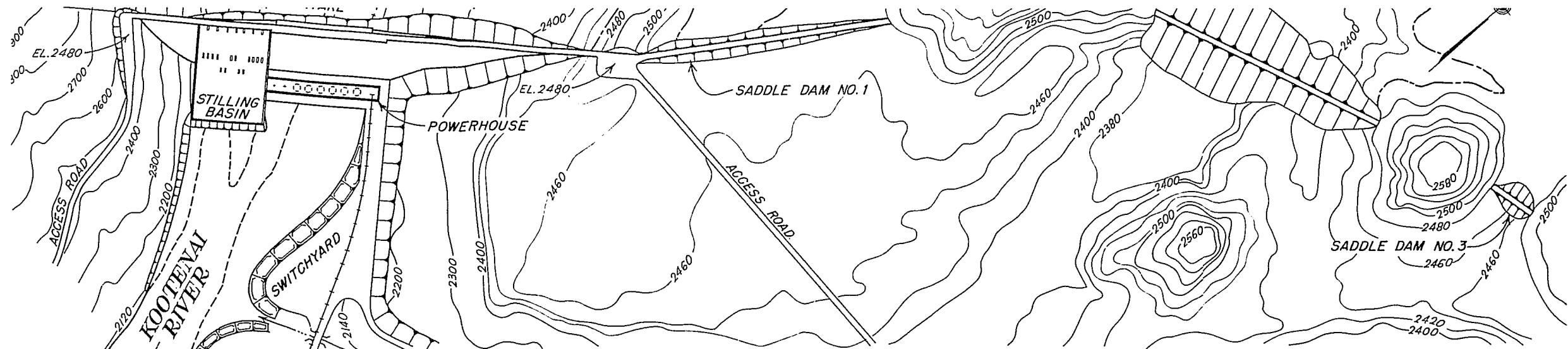


KOOTENAY RIVER BASIN
LIBBY PROJECT
RESERVOIR MAP

To accompany application of the Chief of Engineers to the International Joint Commission for authority to construct Libby Project.

U.S. Army Corps of Engineers
District Engineer, Seattle District
Seattle, Washington
April 1954





NOTE: All data shown hereon other than normal full pool elevation and minimum operating pool elevation are preliminary only and may be changed in final design.

KOOTENAI RIVER BASIN
LIBBY PROJECT
PLAN AND SECTIONS

To accompany application of the Chief of Engineers to the International Joint Commission for authority to construct Libby Project

W.W. Mathews
Col., Corps of Engineers
District Engineer, Seattle District
Seattle, Washington

April 1954

EXHIBIT D