ANALYSIS OF POWER FEATURES

OF

COLORADO - BIG THOMPSON PROJECT

WITH

RECOMMENDED CONSTRUCTION SCHEDULE

by

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Revised
January 5, 1942

Chapter on

ANALYSIS OF THE POWER SYSTEMS IN THE TERRITORY TRIBUTARY TO THE COLORADO-BIG THOMPSON PROJECT

by

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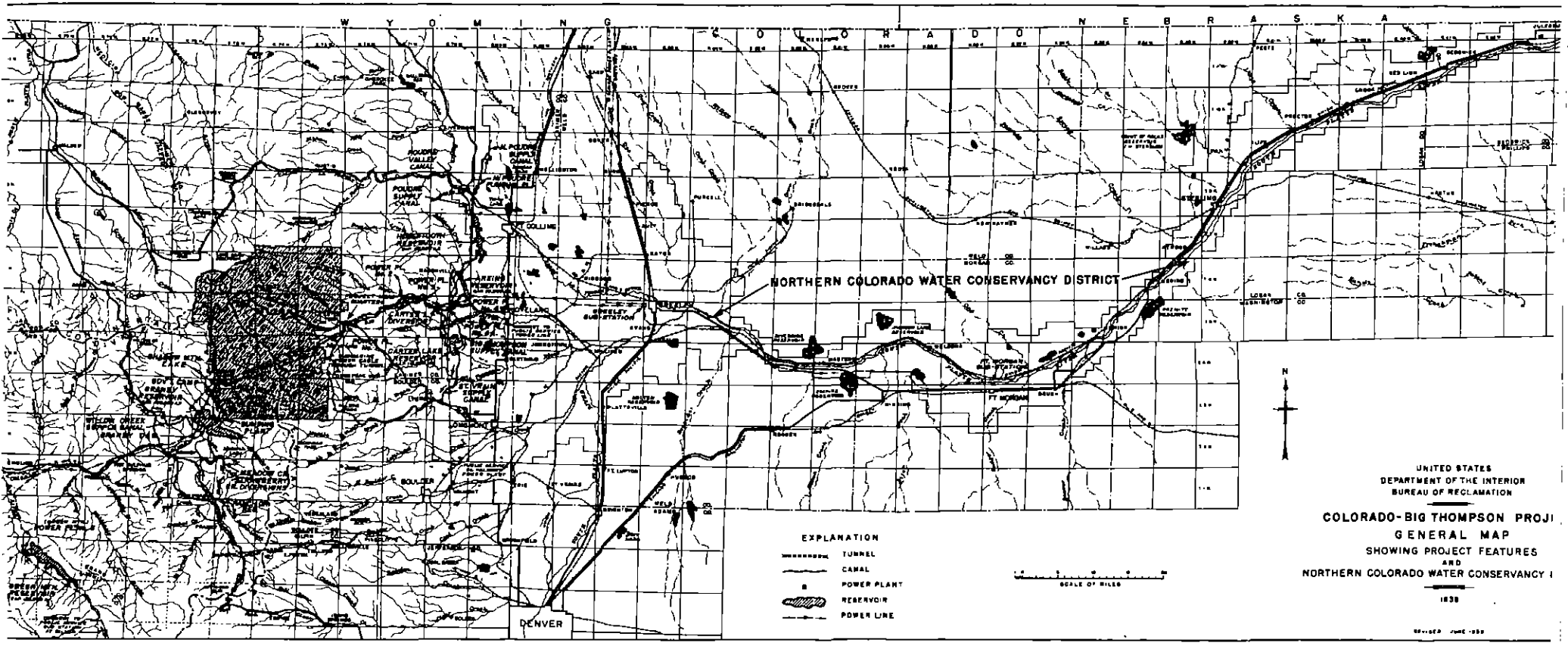
WYOMING
COLORADO
NEBRASKA
NORTHERN COLORADO WATER CONSERVANCY DISTRICT
DENVER
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UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
COLORADO-BIG THOMPSON PROJ
GENERAL MAP
SHOWING PROJECT FEATURES
AND
NORTHERN COLORADO WATER CONSERVANCY
1938

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INTRODUCTION

A memorandum was prepared on October 4, 1940 (revised November 25, 1940) by the Colorado Water Conservation Board recommending accelerated construction of the Colorado-Big Thompson Project in order to make western slope water available to the Northern Colorado Water Conservancy District not later than 1945. Supplementary to that memorandum a report was prepared January 28, 1941 which discussed the amount of electric energy that can be generated by the project, when that energy can be made available, and how much it will cost. Progress during 1941 on the Continental Divide Tunnel, which heretofore had been the bottleneck of the construction of the project, indicates that the essential features of the project can be completed by 1944, if necessary funds are made available. This report has been prepared to suggest a revised construction schedule to attain essential completion of the major power plants of the project by that date, and to indicate the funds that will be required each year to finance the construction costs. The report also indicates the amount of electric energy which can be generated and its probable cost.

A chapter entitled "Analysis of the Power Systems in the territory tributary to the Colorado-Big Thompson Project" has been prepared by Mr. H. S. Sands, Consulting Electrical Engineer. This chapter indicates the amount of peak demand for electric energy for the past several years in the Northern Colorado, Southern Wyoming, and Western Nebraska areas, which are now interconnected, the estimated normal demand for the next few years, the installed and dependable capacities, and the additional capacity which will be available due to certain improvements and additions now under way by the Public Service Company of Colorado. Addi-

tional capacity which will become available on the completion of the power plants of the Colorado-Big Thompson project is also shown. Due to lack of knowledge of probable defense projects to be established in the Intermountain Region no attempt was made to estimate the increased demand due to such requirements.

There exists an intimate relationship between the amount of energy available and its cost, and certain basic industries of Colorado, such as mining, which may assume greater importance due to the emergency. These relationships, however, are not discussed in this report. The primary purposes of the report are to indicate how much energy can be made available by the Colorado-Big Thompson project; on what date; the probable cost of the energy; and the present status of demand and capacity in the area tributary to the project.

The former report has been brought up to date. The latest estimates of the cost of the project, as made by the Bureau of Reclamation, were increased by about 12%, due to estimated increases in construction costs during the past year.

This report was prepared by the staff of the Colorado Water Conservation Board under the writer's direction. Valuable information was obtained from the U. S. Bureau of Reclamation.

A companion report has been prepared by E. Herbert Dyer and Robert Barkley of the staff of the Colorado Water Conservation Board covering the agricultural features of the project and the need for the water which will be made available by it to take care of increased production which the Department of Agriculture may determine is required for defense purposes.

SUMMARY AND CONCLUSIONS

1. The Colorado-Big Thompson Project, consisting of three reservoirs, two collection canals, one power plant, and one pumping plant and canal on the Western Slope, a thirteen mile tunnel through the Continental Divide, and three reservoirs, together with inlet and outlet canals and five power plants on the Eastern Slope, will divert 310,000 acre-feet of water per annum from the headwaters of the Colorado river to the South Platte basin in Northern Colorado. The water so diverted will be utilized for the generation of hydro-electric energy and to relieve existing irrigation water shortages.

2. Following is a list of plant capacities and heads, assuming the project to be constructed and operated in such a way that all the firm energy generated can be used for a commercial load having a load factor of 52%.

Plant No.	Installed Capacity kw.	Effective Head - Feet
Plant No. 1	60,000	520
Plant No. 1A	8,000	184
Plant No. 2	56,000	1195
Plant No. 3	13,000	328
Plant No. 4	16,000	550
Plant No. 4A	7,000	381
Plant No. 5	24,000	225
Totals	184,000	3383

3. The estimated cost of construction of the basic project as made by the U. S. Bureau of Reclamation on June 11, 1939 is $54,288,000. The total estimated cost of the project, including the cost of providing peaking facilities on the eastern slope, as made by the writer last year, is $58,401,000, using the estimated cost of the basic project as made by the Bureau. The cost of the project for the purposes of this report is estimated at $65,000,000, the increase being due to the estimated increase in construction costs during the past year. Of this amount $25,000,000 of the cost is allocated to irrigation and the balance of $40,000,000 will be allocated to power.

4. The average net annual amount of energy that can be generated by the project for such a period as 1902-1941, inclusive, is 876,500,000 kilowatt-hours. This includes the amount of energy that can be generated by the use of Big Thompson water on the Eastern Slope and excludes the amount of energy required for pumping water from Granby reservoir to Shadow Mountain. The maximum amount of energy that can be generated for any one month during the period of minimum stream flow of record is about 40,000,000 kilowatt-hours. This, or 480,000,000 kilowatt-hours per annum, is taken as the amount of firm energy that can be generated by the project, assuming no help by steam. Historical records of run-off in the

Inter-Mountain region, together with records of the stage of Great Salt Lake, indicate that this amount of energy is the minimum that can be expected for such a 92-year period as 1850 to 1941.

5. The contract between the United States and the Northern Colorado Water Conservancy District specifies that the project shall be operated primarily for irrigation, but provides that not less than 255,000 acre-feet shall be diverted through the tunnel in any one year, distributed in whatever manner the Bureau of Reclamation determines, for the purpose of generating firm energy. The net amount of energy that can be generated by the diversion of that quantity of water through the tunnel, plus the average amount of power that can be generated by the Green Mountain Power plant (No. 5) and by Big Thompson water, less the energy required for pumping, is about 750,000,000 kilowatt-hours per annum. However, during the period of lowest water supply the project energy can be firmed to 720,000,000 kilowatt-hours per annum by the use of off-peak steam energy generated by existing steam plants (not including reserve capacity) of the interconnected Northern Colorado connected systems. Therefore, the provisions of the contract will not curtail the amount of firm energy that can be generated.

6. It is estimated that 648,000,000 kilowatt-hours of firm energy per annum can be delivered at the market, assuming 10% loss in transmission. In addition to the firm energy, 160,000,000 kilowatt-hours of secondary energy will be available at the market. It is estimated the secondary energy can be sold at 1.8 mills per kilowatt-hour. The cost of the firm energy will be 3.47 mills per kilowatt-hours which includes the cost of purchasing off-peak steam energy when necessary for firming at 5 mills per kilowatt-hour. The above costs are on the assumption all power will be absorbed when the project is completed and goes into operation.

7. It is estimated that the project can be essentially completed by the end of the fiscal year 1944. The present rate of progress on the construction of the Continental Divide Tunnel indicates that the excavation will be completed by the middle of the summer of 1943. Work on other features of the project, however, must be vigorously pushed, including the construction of Granby reservoir which is essential to the production of firm energy by the project.

The following table shows the amount of the funds required to complete the power features of the project by the end of the fiscal year 1944. No eastern slope irrigation features are included in these estimates.

	For Power Features Only	For Power and Irrigation Features
Total appropriations and allotments to June 30, 1942	$11,050,000	$11,050,000
Required for fiscal year 1943	18,055,000	24,005,000
Required for fiscal year 1944	15,090,000	23,069,000
Required for fiscal year 1945	3,666,000	6,876,000
	$47,861,000	$65,000,000

This will complete all power plants which will generate 75% of the total energy by the end of the fiscal year 1944 and will complete all power features by the end of the fiscal year 1945.

8. Directly tributary to the project is Northern Colorado, Wyoming, and Western Nebraska. The major power systems of this area are now interconnected. The total dependable capacity of the interconnected and adjacent isolated systems on January 1, 1942 was 257,521 kilowatts, of which 53,340 kilowatts were hydro and 204,181 kilowatts were steam and internal combustion. Of this amount 38,282 kilowatts are considered as reserve, leaving a net assured capacity of 219,239 kilowatts. By interconnection of the four isolated plants with the large system, the reserve may be reduced to 29,000 kilowatts, resulting in a corresponding raise in net assured capacity to 228,521 kilowatts.

The 1941 peak demand was 180,479 kilowatts, and it is estimated that the Denver Ordinance Plant, when up to production, will take an additional 4,000 kilowatts of demand. The 1941 production was 822,266,247 kilowatt-hours.

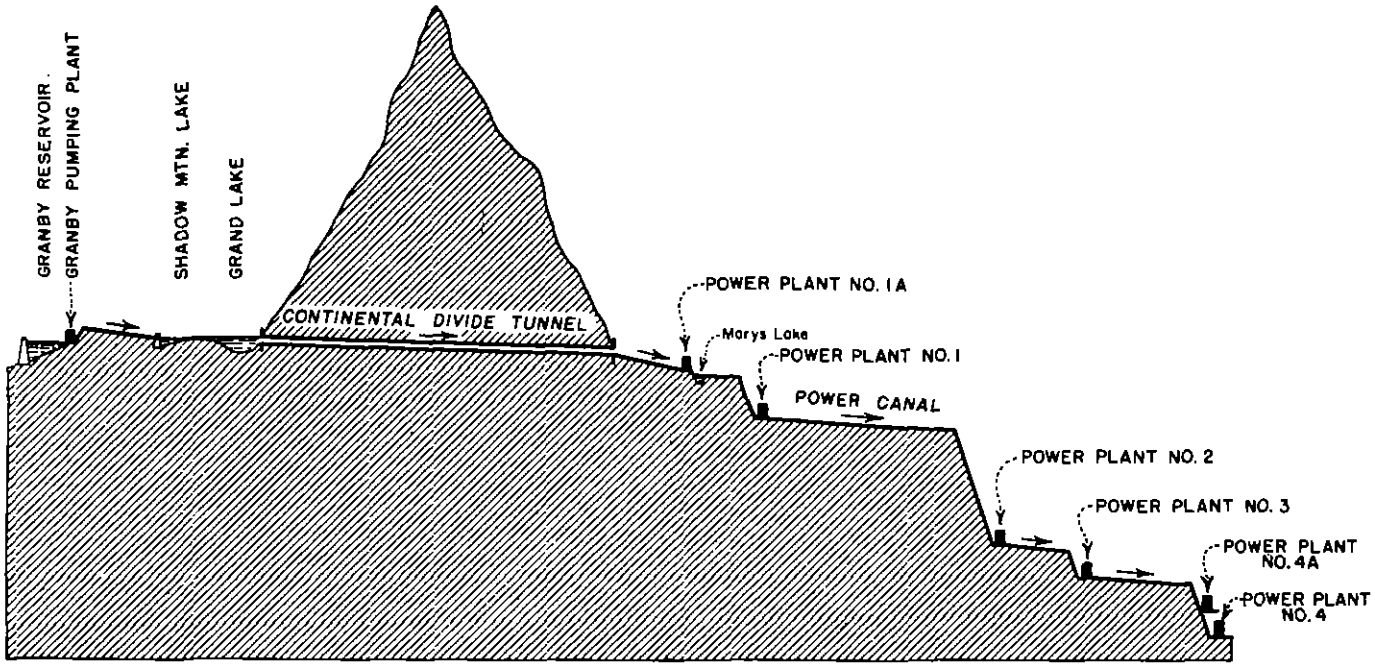
The total dependable capacity on January 1, 1942 was 257,521 kilowatts and the net assured capacity could easily be made by interconnection 228,521 kilowatts, leaving an available capacity not used of 44,042 kilowatts. If the contemplated program is carried out there will be net assured capacities at the time of the annual peak, which usually occurs in December, as follows:

December, 1942	229,161
December, 1943	258,261
December, 1944	369,861
December, 1945	397,221

GENERAL

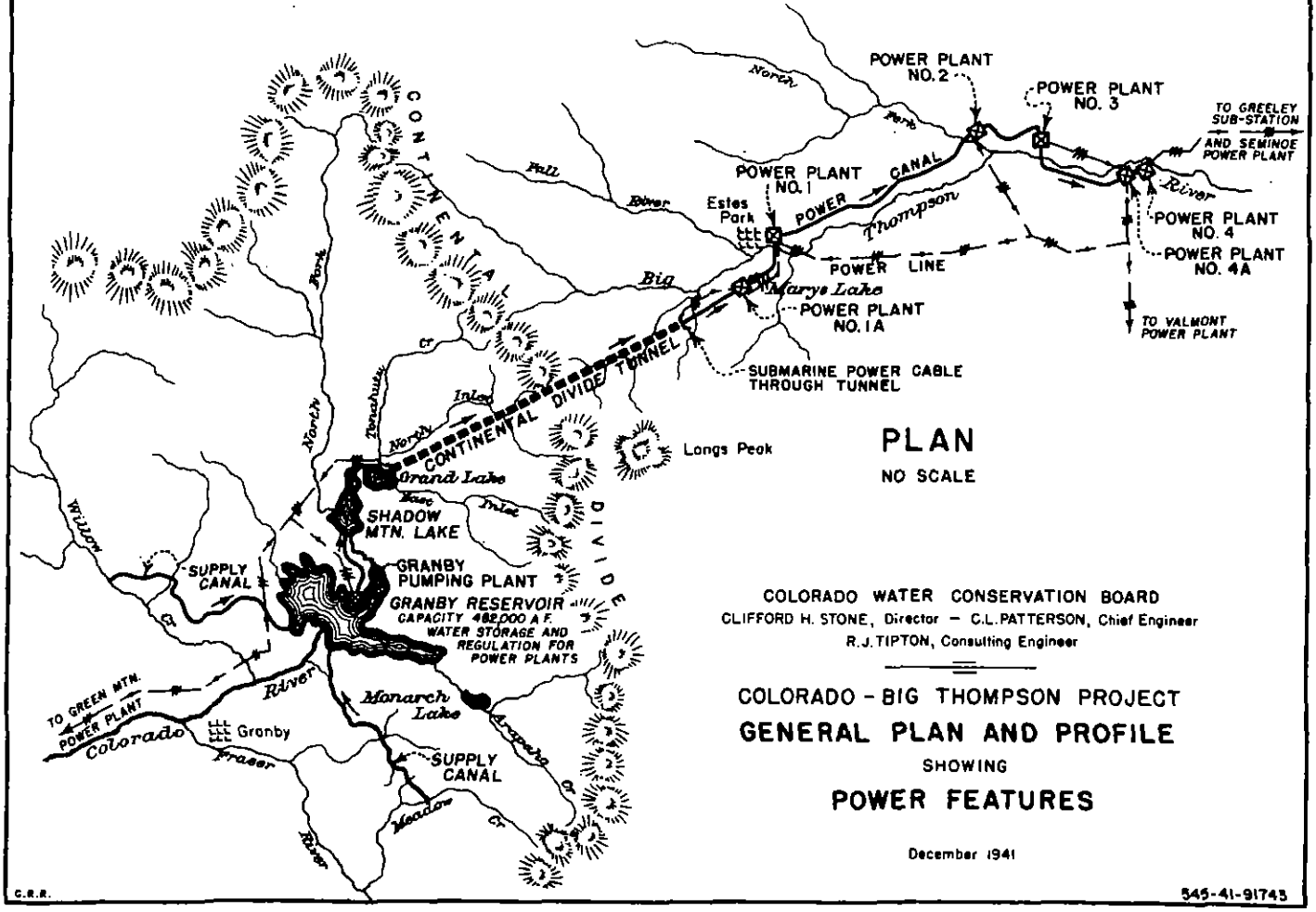
The Colorado-Big Thompson Project was conceived to divert an average of about 310,000 acre-feet of water per annum from the headwaters of the Colorado River to the South Platte River basin in Northern Colorado, in order to relieve shortages of irrigation water and to generate hydro-electric energy.

The project consists of collection canals and storage reservoirs on the Western Slope, a 13.1 mile tunnel through the Continental Divide, a series of power plants and recapture reservoirs on the Eastern Slope, together with canals leading from the reservoirs to the various tributa-



PROFILE

NO SCALE



PLAN

NO SCALE

COLORADO WATER CONSERVATION BOARD

CLIFFORD H. STONE, Director — C.L. PATTERSON, Chief Engineer

R.J. TIPTON, Consulting Engineer

COLORADO - BIG THOMPSON PROJECT

GENERAL PLAN AND PROFILE

SHOWING

POWER FEATURES

December 1941

C.R.R.

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ries of the South Platte to which the Colorado River water is to be diverted. U.S.B.R. drawing number 245-D-259 shows the general plan of the project and Colorado Water Conservation Board drawing number 92226 is a profile of the project.

Colorado Water Conservation Board drawing No. 91743 is a simplified general plan and profile of the project showing the power features.

The principal storage and regulating reservoir is Granby reservoir which will have a capacity of 482,000 acre-feet, of which 20,000 acre-feet will be dead storage. This reservoir, located on the main stream about four miles above Granby, will control all the water originating in the Colorado river basin above that point. Canals will divert to the reservoir the run-off of Willow, Meadow and Strawberry creeks which now enter the river below Granby reservoir. Granby reservoir is essential to the power features of the project in order to permit the generation of firm energy. This will be discussed in more detail hereinafter. Water will be diverted to the Continental Divide tunnel by means of a dam 35 feet in height which will create Shadow Mountain Lake, having the same elevation as Grand Lake. Water which is stored and regulated in Granby reservoir will be pumped to the Shadow Mountain Lake and thence directly to the tunnel. The average pumping head will be about 140 feet.

Water after passing through the Continental Divide tunnel will pass through five power conduits and power plants on the Eastern Slope. These plants and intakes are so located that Big Thompson water also can be used for the generation of power at Nos. 2, 3 and 4. No diversions of Big Thompson water are made, however, when the flow is less than 100

cubic feet per second at Estes Park. After the water passes through the power plants, a portion of it will be stored in Horsetooth reservoir, for use in the Cache la Poudre river basin. Part of the water will be stored in Arkins reservoir, or its equivalent, and subsequently released for use along the Big Thompson river. The balance of the water will be stored in Carter Lake for use in the Little Thompson and St. Vrain basins.

The original plan of the Bureau of Reclamation did not contemplate pondage above the power plants on the Eastern Slope. Without such pondage the power generated by the Eastern Slope plants could be used only as base load energy. The plan suggested herein contemplates the dividing of the head of Power Plant No. 1, as originally set up, into two parts, thereby making available existing Marys Lake for pondage purposes. Pondage is also contemplated for power plants Nos. 2 and 3. The existence of the forebay storage is sufficient to make all the energy generated by the project power plants available to take care of a commercial load having a load factor of about 52%.

On the Western Slope the Green Mountain reservoir, having a capacity of 152,000 acre-feet, is being constructed on the Blue river, 52,000 acre-feet of which will be used for replacement purposes and power generation and 100,000 acre-feet for power generation. This reservoir will impound surplus water from Blue River and will release that water to the stream in such a way that all the water physically available to the Colorado-Big Thompson Project can be diverted without interfering with present or prospective developments in Colorado along the Colorado River. Power plant No. 5 will be constructed at Green Mountain reservoir.

Table No. 6 in the appendix gives a description of the principal

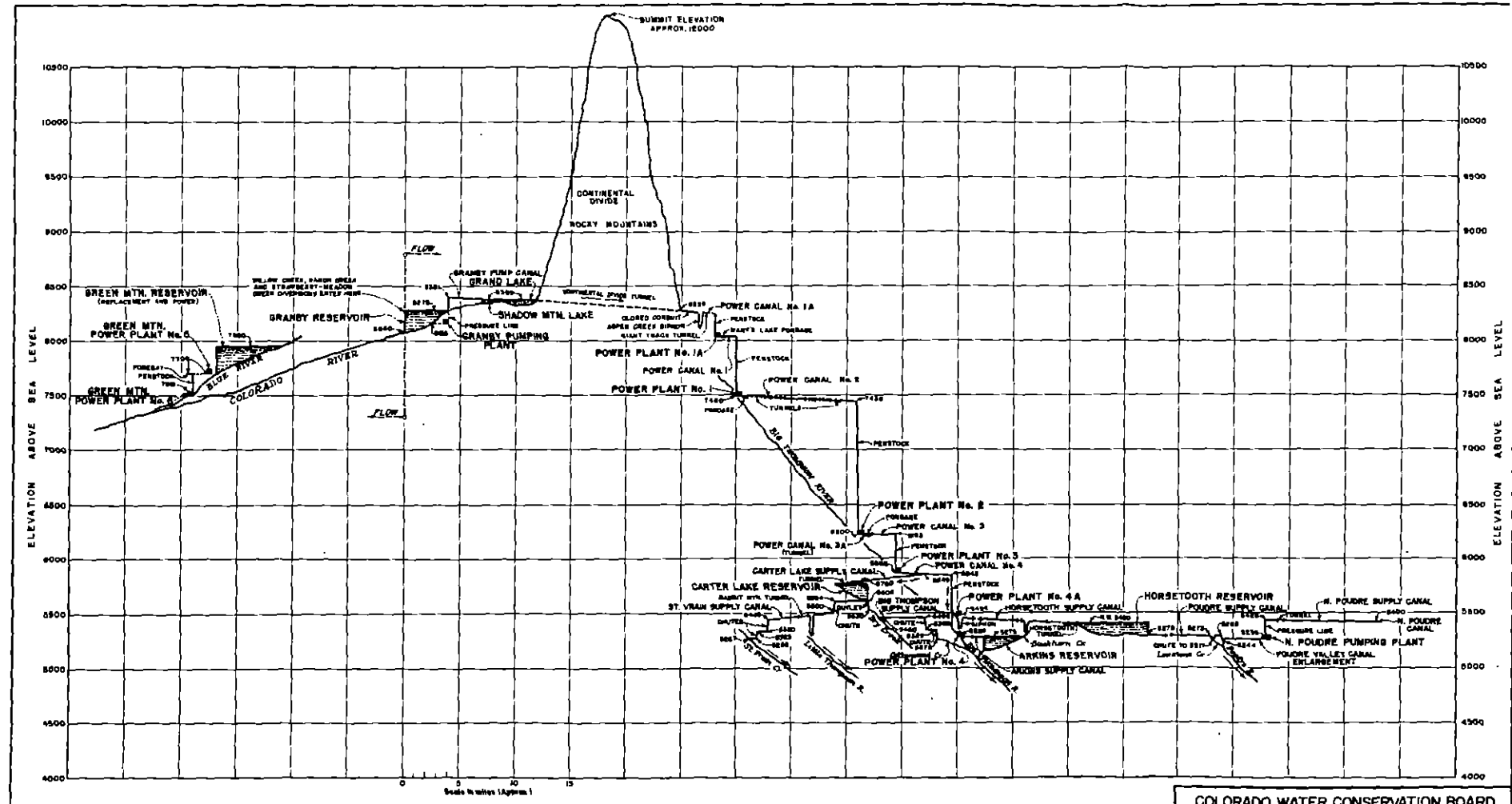
features of the project, together with their estimated costs. It may be noted that the estimated cost of the basic project, as made by the Bureau of Reclamation on June 11, 1939 is $54,288,000. It was estimated in January, 1941 (see the supplement to Table No. 6) the provision for peaking facilities on the Eastern Slope will cost an additional $4,113,000 making a total estimated cost of the peaking project of $58,401,000. Due to increased construction costs during the past year it is estimated that the project will cost $65,000,000, of which about $48,000,000 are essential to the power features.

OPERATION OF THE PROJECT

The following provision is made in the contract between the United States and the Northern Colorado Water Conservancy District:

> "It is agreed and understood that the use of water made available by the project shall be primarily for irrigation and domestic uses; and that the manner of delivery shall be to this end. It is, however, expressly recognized, understood, and agreed by the parties hereto that feasibility of the project and therefore development of the primary water uses are dependent upon a minimum annual transmountain flow of 255,000 acre-feet to be used both in generation of hydro-electric power and for primary purposes. It is therefore understood and agreed that the United States shall have the privilege of flowing through Continental Divide Tunnel not less than 255,000 acre-feet in any water year (being from November 1 of any year through October 31 of the succeeding year), at such rates of flow in any one year as may be determined by the Secretary."

It is contemplated that the tunnel will be run to capacity throughout the winter period, except during those times when Granby reservoir is to be used for hold-over purposes. The water so diverted, after passing through the Eastern Slope power plants, will be stored in the Eastern Slope recapture reservoirs to be released therefrom when the



COLORADO WATER CONSERVATION BOARD
ENGINEERING DEPARTMENT

COLORADO-BIG THOMPSON PROJECT

DEVELOPED PROFILE AND DIAGRAM

Drawn
Traced E.E.S.
Checked A.C.S.

APPROVED R. J. Taylor
CONSULTING ENGINEER

DENVER, COLO. Jan. 9, 1941

545-41-92226

COLORADO-BIG THOMPSON PROJECT OPERATION DIAGRAMS FOR UNIFORM ENERGY ASSUMING HOLDING 100,000 A F IN GRANBY RESERVOIR ON OCTOBER FIRST

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Revised Dec. 15, 1941

natural South Platte water supply is deficient, generally after July first. The tunnel diversions will be reduced at the time Eastern Slope run-off is at its peak in the summer, in order to permit the use of Big Thompson water for the generation of hydro-electric energy. Present plans propose having in storage in Granby reservoir at least 100,000 acre-feet each year on October 1st for the generation of winter energy.

Studies were made to determine the amount of water that will be available for diversion by the project and the amount of energy that can be generated for such a period as 1902 to 1941. Since sufficient records were not available during this period to determine the manner in which the demand for the water for irrigation purposes will vary, this demand was disregarded and the project was operated on the basis of providing a fairly uniform supply for the generation of energy. The results of the basic study were checked with the results of an operation based upon the specific limitation contained in the contract.

Drawing No. 92227 shows the results of the basic study. The drawing consists of three parts, the upper one of which indicates the storage contents of Granby reservoir by months from 1902 to 1941. The middle part of the drawing indicates the average daily tunnel diversions by months for the same period. The lower portion of the drawing indicates the number of kilowatt-hours, in millions, generated by all the power plants of the project for each month of the period. The energy generated by the Eastern Slope plants, that generated by power plant No. 5, and the energy used for pumping are all shown separately on the drawing.

Summary table No. 1 in the appendix indicates the amount of

water available for diversion through the tunnel by months for such a period as 1902 to 1941. This does not include approximately 12,000 acre-feet available from Meadow and Strawberry creeks. It is assumed that this water is about enough to take care of the evaporation from the Western Slope reservoirs, and other losses. The average annual amount of water available for diversion during the period was 309,900 acre-feet.

The total amount of energy that can be generated by this water by the Eastern Slope plants is 708,700,000 kilowatt-hours per year. The average that can be generated by power plant No. 5 for the period under consideration is estimated at 113,100,000 kilowatt-hours per annum. About 98,200,000 kilowatt-hours per annum can be generated by the use of Big Thompson water. An average of 43,500,000 kilowatt-hours per annum will be required for pumping at the Granby pumping plant. The average net amount of energy therefore that can be generated by the power plants of the project for such a period as 1902 to 1941 is 876,500,000 kilowatt-hours. This, however, is not all firm energy.

It may be noted from the drawing that the years of lowest run-off for the period 1902 to 1941 were 1934 and 1935. The period when the least energy was available was the seven-month period extending from October, 1934 to April, 1935. The amount of energy available during those months averaged about 40,000,000 kilowatt-hours per month, or at the rate of 480,000,000 kilowatt-hours per annum.

With peaking facilities provided for the Eastern Slope plants, enough steam capacity exists in the Northern Colorado interconnected systems to firm the output of the project plants to 720,000,000 kilowatt-hours per year at the plants. It is contemplated this firming would be

done by furnishing off-peak energy from the operating steam plants, project water to be stored in the ponds during those hours, this water then to be released for the generation of energy by the project plants during the hours of peak demand. In the calculations no reserve steam capacity was contemplated to be used for firming project energy.

Table No. 3 in the appendix is a summary of the net energy production of all project plants. Table No. 4 indicates the monthly production by each plant for the period 1902 to 1941. Table No. 5 indicates the quantity of energy necessary to be supplied during off-peak periods by steam plants to firm the project energy to 720,000,000 kilowatt-hours per year. It may be noted that there are sixty-seven months out of a total of four hundred and eighty when off-peak steam energy would have been required.

The provisions of the contract between the United States and the Northern Colorado Water Conservancy District (see page 8 of this report) would limit the generation of firm energy to about 750,000,000 kilowatt-hours per annum summarized as follows:

Source	Energy 1,000,000 kwh. per Annum
Tunnel diversions 255,000 A.F.	583
Big Thompson	98
Plant No. 5	113
Total	794
Energy required for pumping	44
Net	750

The above is on the assumption that water at all times would be available in amounts of at least 255,000 acre-feet per annum for diversion through

the tunnel. However, in such a period as 1902 to 1941, periods of low water supply would limit firm energy generation to about 480,000,000 kilowatt-hours per annum without aid from steam plants, and to about 720,000,000 kilowatt-hours per annum if existing off-peak steam capacity is used for firming project energy. Therefore, the project can be operated as outlined in this report without violating the provision of the contract quoted on page 8.

COST OF GENERATING AND DELIVERING ELECTRICAL ENERGY FROM PROJECT

The cost of generating and delivering energy from the project is made up of the following items:

1. Annual repayment and interest on that portion of the project allocated to power.

2. One-half the annual operation and maintenance expense of the joint features.

3. The annual operation and maintenance expense of the power plants and power canals.

4. The annual depreciation chargeable to power.

The contract between the United States and the Northern Colorado Water Conservancy District allocates $25,000,000 of the cost of the project to irrigation. The allocation to power, therefore, for the purpose of this report is estimated at $40,000,000. A repayment period of 40 years at 3% interest on that portion of the project allocated to power is assumed.

The contract between the United States and the District provides that the cost of operating the following features shall be borne by the

United States (power):

Power Plant No. 5
Power Plant No. 1
Power Plant No. 2
Power Canal No. 2
Power Plant No. 3
Power Canals No. 3 and No. 3A
Power Plant No. 4
Power Canal No. 4
Power Plant No. 4A
Transmission lines except the one between Power Plant No. 1 and the Granby Pumping Plant.

The contract provides that the cost of operating and maintaining the following works shall be borne by the District:

North Poudre Supply Canal
North Poudre Pumping Plant, and
The St. Vrain Conduits.

The contract provides that the cost of operating and maintaining all other works, not listed above, shall be borne equally by the United States and the District. The annual operation and maintenance cost of these features is estimated at $140,000. The amount chargeable to power is $70,000 per annum.

Annual operation and maintenance of the power features is estimated at $410,000. The details of operation and maintenance estimates are given in Table No. 7 of the Appendix.

The total cost of the depreciable items of the power features is estimated to be $11,953,000. The details of these estimates are given in Table No. 8 of the Appendix. It is assumed that these depreciable items will have a life of 30 years. A sinking fund is assumed to be set up for 30 years at 3%. On this basis the average annual depreciation chargeable to power is estimated at $251,000.

In order to firm the output of the project power plants to 720,000,000 kilowatt-hours per annum at the plants, or 648,000,000 kilowatt-hours at the market, it is estimated that for such a period as 1902 to 1941 it would be necessary to purchase an average of 15,300,000 kilowatt-hours of off peak steam energy per annum. These purchases would be made in only 14 years of the 40 year period, but the purchases in those years would be in such amounts as to make the average for the entire 40 years 15,300,000 kilowatt-hours. It is not known how much this off-peak steam energy would cost the United States. Essentially it is only fuel replacement energy, the cost of which in this region, including overhead, is about 2 mills per kilowatt-hour. However, for the purpose of this report a price of 5 mills per kilowatt-hour at the market was assumed. The average annual cost of the purchased steam energy therefore was assumed to be $69,000

The total annual estimated cost of generating and delivering the project energy is $2,528,000. It is estimated that for such a period as 1902 to 1941 an average total of 890,300,000 kilowatt-hours of energy would be available per annum from the project, 648,000,000 kilowatt-hours of which would be firm energy and 154,700,000 kilowatt-hours of which would be secondary energy at the market, transmission losses being estimated at 87,600,000 kilowatt-hours. The estimated annual revenue from the sale of secondary energy at 1.8 mills is $279,000 leaving the sum of $2,249,000 as the cost of generating and delivering the firm energy, which is at the rate of 3.47 mills per kilowatt-hour. The assumed market is wholesale and not retail.

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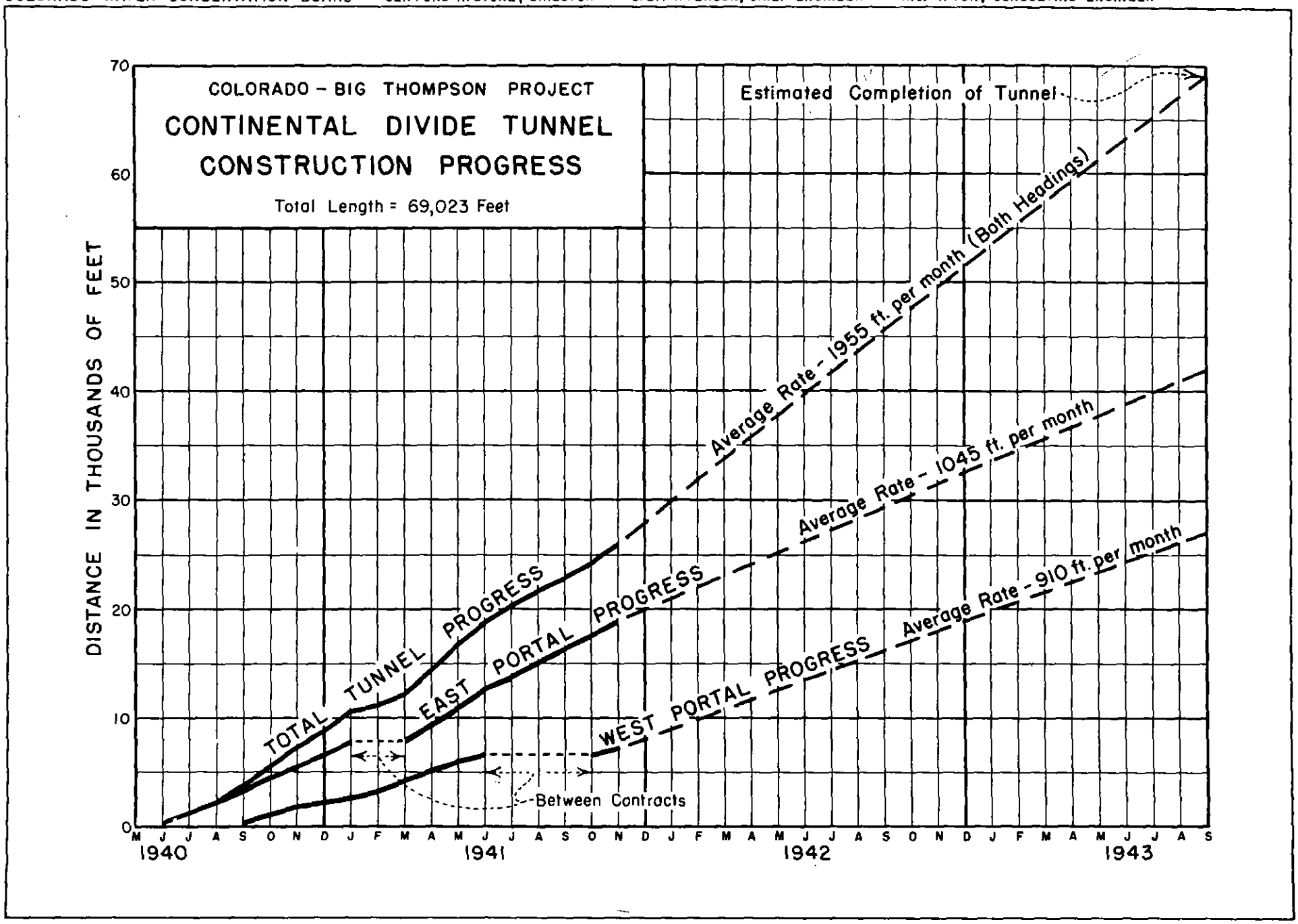

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COLORADO - BIG THOMPSON PROJECT

SUMMARY OF ESTIMATED COST OF GENERATION AND TRANSMISSION OF FIRM ENERGY

ITEM	Peaking Project
TOTAL COST	
Total Estimated Cost of Project	$65,000,000
Cost Allocated to Irrigation	25,000,000
Cost Allocated to Power	40,000,000
ANNUAL COST	
One Half of Annual O & M of Joint Features	70,000
Annual Depreciation Chargeable to Power	251,000*
Annual O & M of Power Plants	410,000
Annual Repayment & Interest Chargeable to Power	1,728,000**
Average Annual Cost of Purchased Steam Energy at 5 mills per Kwh.	69,000
Total Estimated Annual Cost of Energy	$ 2,528,000
COST OF ENERGY PER KWH.	
Estimated Annual Revenue from Sale of Secondary Energy at 1.8 mills per Kwh.	279,000
Total Estimated Cost of Firm Energy	2,249,000
Estimated Cost of Kwh. of Firm Energy	$ .00347

* Depreciation Assumed on Basis of Sinking Fund, 30 years at 3 per cent
** Repayment Period Assumed as 40 Years with Interest at 3 per cent

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ESTIMATED AMOUNT OF ENERGY AVAILABLE FOR SALE BY PROJECT

Millions of Kwh. at Market

	Peaking Project
Average Annual Firm from Project Plants	634.2
Average Annual Purchased for Firming	13.8
Average Annual Firm Energy	648.0
Average Annual Secondary Energy	154.7
Average Annual Total Energy at Market	802.7
Average Annual Losses (10% of Generation)	87.6
Average Annual Total Generated & Purchased Energy	890.3

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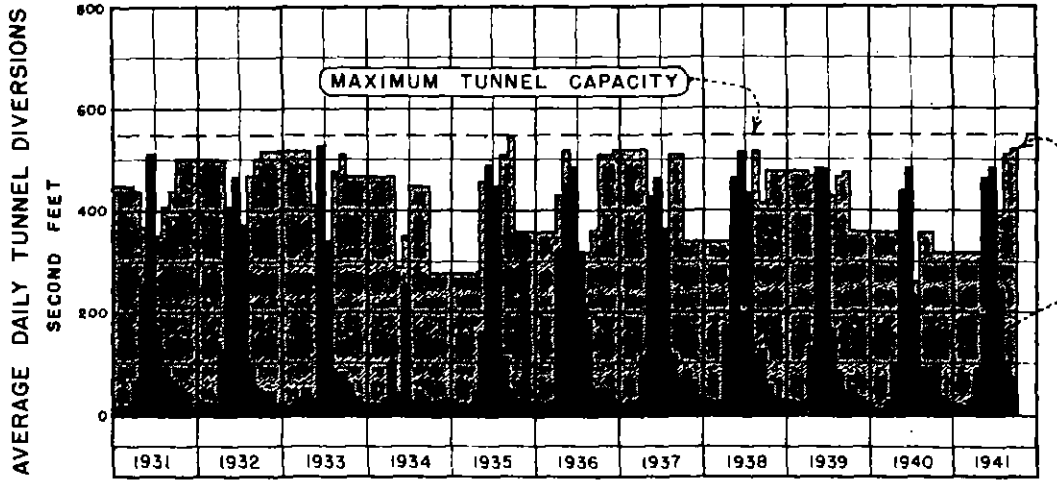
COLORADO – BIG THOMPSON PROJECT

OPERATION DIAGRAMS

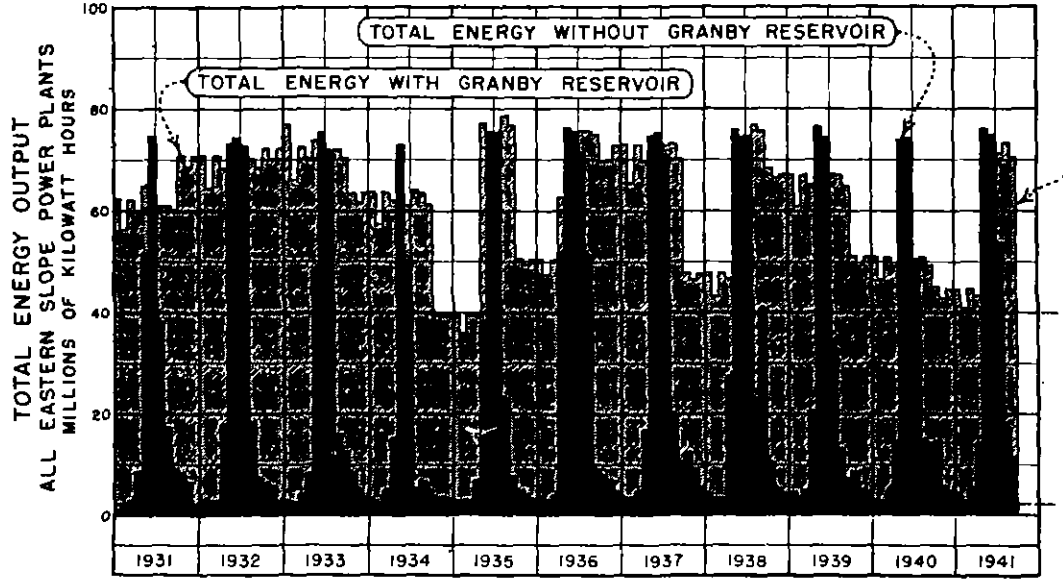
December 1941



AVERAGE DAILY TUNNEL DIVERSIONS WITH AND WITHOUT GRANBY RESERVOIR

TUNNEL DIVERSIONS WITH GRANBY RESERVOIR

TUNNEL DIVERSIONS WITHOUT GRANBY RESERVOIR



OPERATION DIAGRAMS OF ALL EASTERN SLOPE POWER PLANTS WITH AND WITHOUT GRANBY RESERVOIR

SINGLE HATCHED AREA SHOWS REDUCTION OF ENERGY WITHOUT GRANBY RESERVOIR

TOTAL FIRM ENERGY WITH GRANBY RESERVOIR

456 MILLION KWH PER YEAR

REDUCTION OF FIRM ENERGY WITHOUT GRANBY RESERVOIR

TOTAL FIRM ENERGY WITHOUT GRANBY RESERVOIR

ACS CRR

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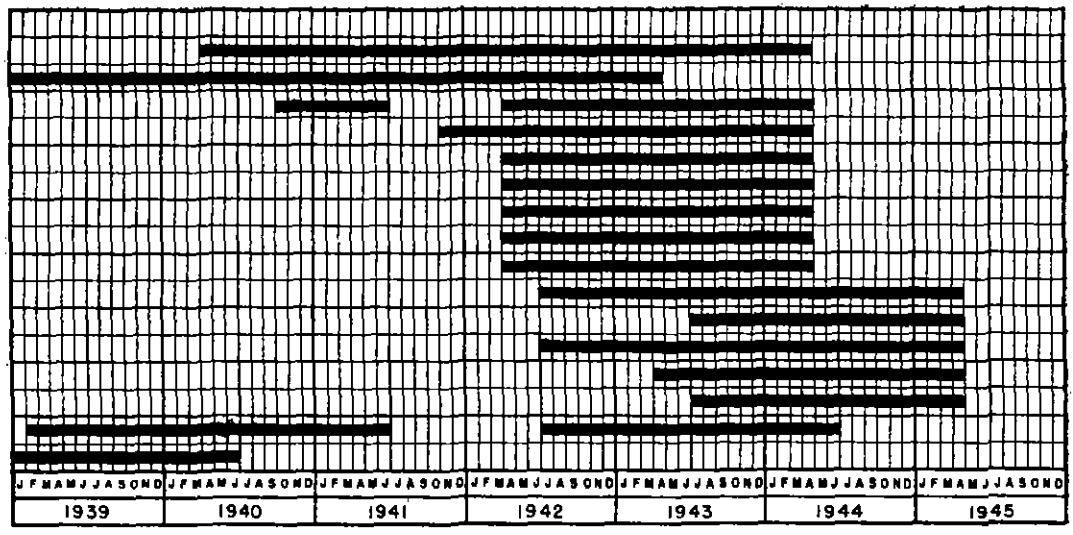
000992

ESTIMATED POSSIBLE TIME OF COMPLETION OF PROJECT

The feature of the project which heretofore has been considered the one requiring the longest time to complete is the Continental Divide tunnel. On December 31st 27,961 feet of the tunnel had been driven. This is 40% of the total length. If the work can proceed without interruption, and if excavation conditions are no worse than have been encountered to date, the driving of the tunnel can be completed by the middle of 1943. Drawing No. 91740 indicates actual progress on the tunnel to date. Estimated progress is also shown, which indicates completion during 1943.

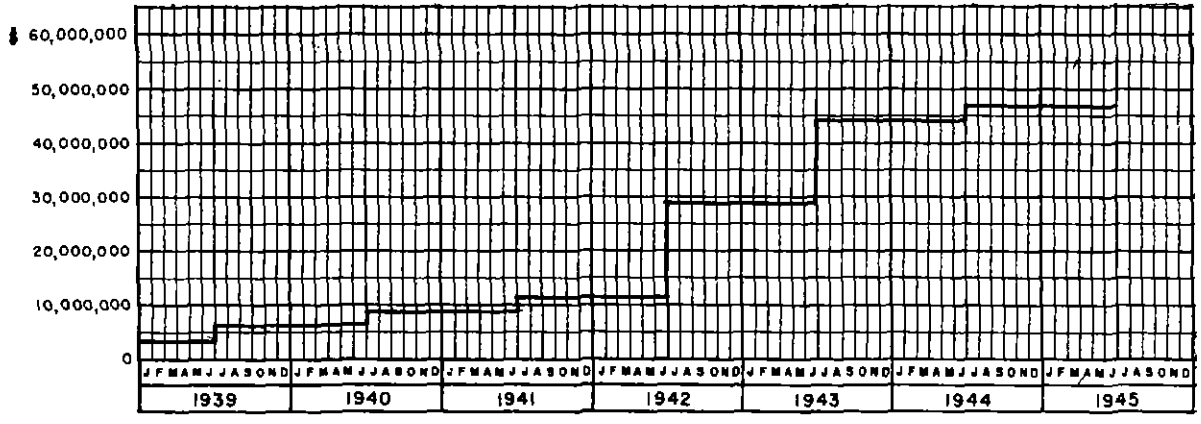
Green Mountain reservoir and power plant will be completed on or before May, 1943. Various features such as roads, camps, and transmission lines have been finished. A contract has been let for the construction of the diversion tunnel for Granby reservoir. If sufficient funds are made available it is estimated essential features for the operation of the principal power plants of the project can be completed by the end of the fiscal year 1944 and that all power plants can be placed in operation by the end of the fiscal year 1945.

To insure the successful operation of the power features of the project, Granby reservoir, pumping plant and canal, and Shadow Mountain Lake, must be finished on or before the completion of the tunnel. Granby reservoir is the principal regulating reservoir of the project. It intercepts all the water tributary to it. The pumping plant which is an essential part of the reservoir unit, pumps the water to Shadow Mountain Lake from which it flows to the tunnel. Without Granby reservoir little firm energy can be generated by the project. This situation



SUGGESTED CONSTRUCTION SCHEDULE

Continental Divide Tunnel
Green Mountain Dam and Power Plant
Shadow Mountain Dam
Granby Dam
Granby Pumping Plant and Canal
Power Canal No 1 and No. 1A
Power Plant No.1 and No.1A
Power Canal No. 2
Power Plant No. 2
Power Canal No. 3
Power Plant No. 3
Power Canal No 4
Power Plant No. 4
Power Plant No. 4A
Transmission lines and Sub. Sta.
Roads, Buildings, etc.



REQUIRED FUNDS FOR SUGGESTED CONSTRUCTION SCHEDULE

COLORADO WATER CONSERVATION BOARD
CLIFFORD H. STONE, Director C.L. PATTERSON, Chief Engineer
R.J. TIPTON, Consulting Engineer

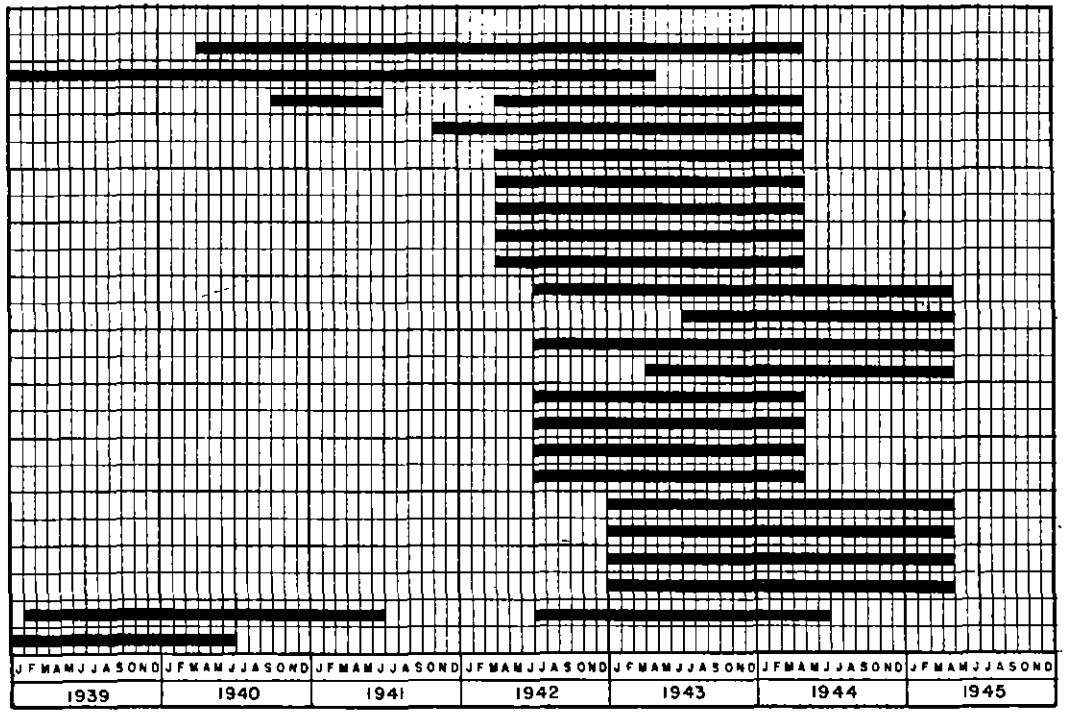
COLORADO - BIG THOMPSON PROJECT

SUGGESTED CONSTRUCTION SCHEDULE

POWER FEATURES

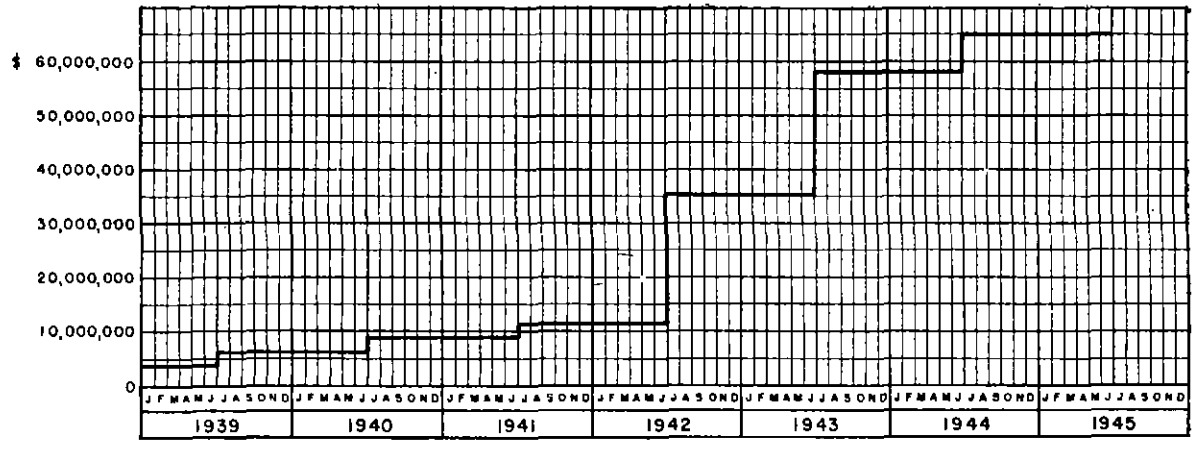
December 1941

051-41-91744



Continental Divide Tunnel
Green Mountain Dam and Power Plant
Shadow Mountain Dam
Granby Dam
Granby Pumping Plant and Canal
Power Canal No. 1 and No. 1 A
Power Plant No. 1 and No 1 A
Power Canal No. 2
Power Plant No 2
Power Canal No. 3
Power Plant No. 3
Power Canal No 4
Power Plant No 4
Power Plant No. 4 A
Horsetooth Dam
Horsetooth Supply Canal
Poudre Supply Canal
Carter Lake Dam
Carter Lake Supply Canal
Arkins Res. or Equiv. East Slope Storage
Arkins Reservoir Inlet Canal
Transmission lines and Sub. Sta
Roads, Buildings, etc.

SUGGESTED CONSTRUCTION SCHEDULE



REQUIRED FUNDS FOR SUGGESTED CONSTRUCTION SCHEDULE

COLORADO WATER CONSERVATION BOARD
CLIFFORD H. STONE, Director C. L. PATTERSON, Chief Engineer
R. J. TIPTON, Consulting Engineer

COLORADO - BIG THOMPSON PROJECT

SUGGESTED CONSTRUCTION SCHEDULE

POWER AND IRRIGATION FEATURES

December 1941

CHART No. 1

is graphically shown on Drawing No. 91742. It may be noted that without Granby reservoir during the winter period tunnel diversions would be negligible, averaging probably less than 20 second feet. The total firm energy that can be generated with the reservoir in operation is estimated at about 480,000,000 kilowatt-hours per annum. Without the reservoir it is estimated at about 24,000,000 kilowatt-hours per annum, or a reduction of about 456,000,000 kilowatt hours per year. This indicates the necessity of having Granby reservoir in operation when the tunnel goes into operation.

The attached diagrams indicate what appears to be a logical construction schedule to insure the operation of the major power plants by the summer of 1944 and the operation of all plants by the summer of 1945. The dates of commencement of the essential features are shown on the diagram, together with the dates of completion. The amounts of funds necessary are shown on the lower portion of the diagram. The following table shows the amounts of funds required in accordance with the above suggested schedule:

	For Power Features Only	For Power and Irrigation Features
Total appropriations and allotments to June 30, 1942	$11,050,000	$11,050,000
Required for fiscal year 1943	18,055,000	24,005,000
Required for fiscal year 1944	15,090,000	23,069,000
Required for fiscal year 1945	3,666,000	6,876,000
	$47,861,000	$65,000,000

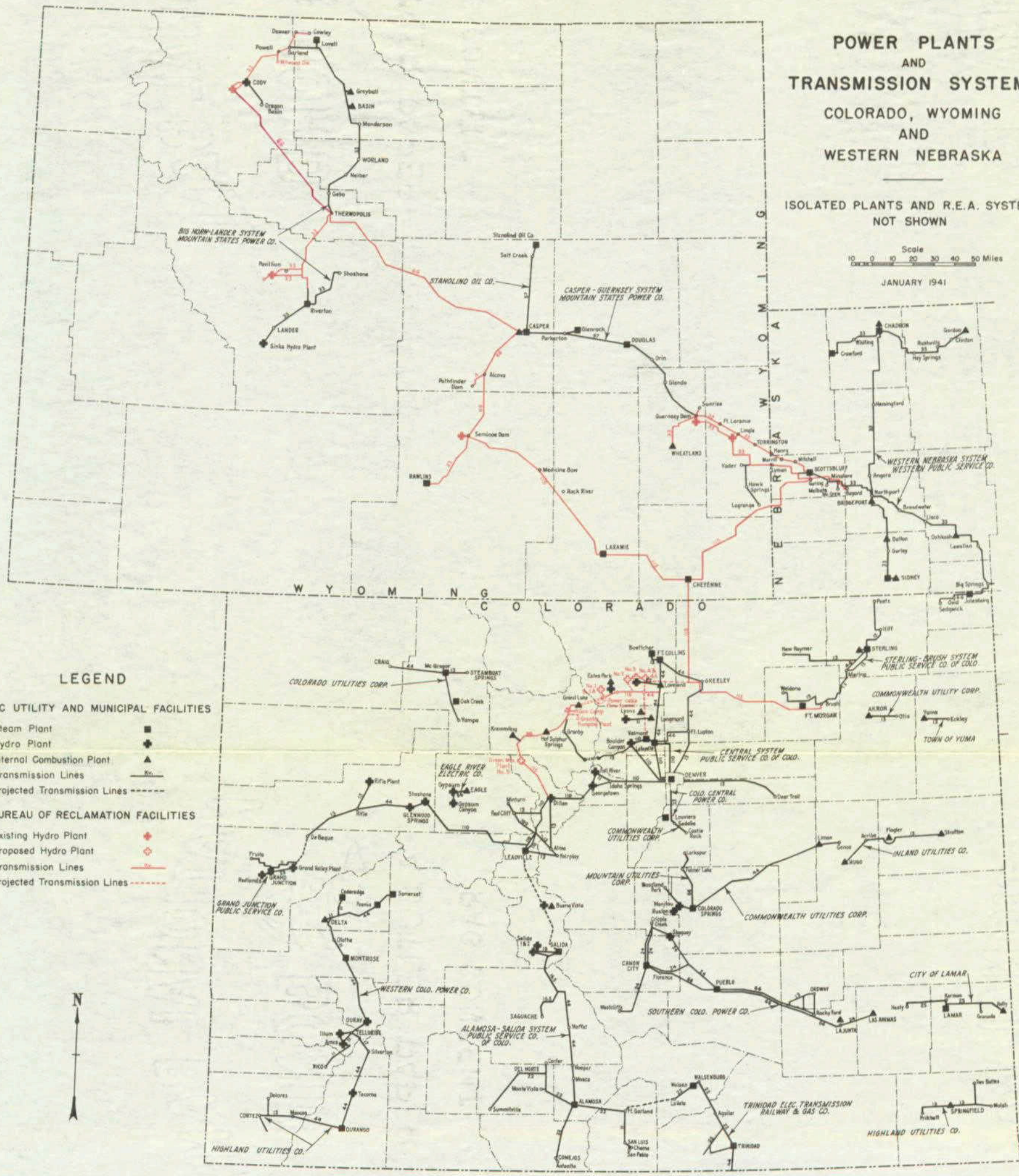
POWER PLANTS AND TRANSMISSION SYSTEMS

COLORADO, WYOMING AND WESTERN NEBRASKA

ISOLATED PLANTS AND R.E.A. SYSTEMS NOT SHOWN

Scale 10 0 10 20 30 40 50 Miles

JANUARY 1941



LEGEND

PUBLIC UTILITY AND MUNICIPAL FACILITIES

- Steam Plant ■
- Hydro Plant ✚
- Internal Combustion Plant ▲
- Transmission Lines ——— Kv.
- Projected Transmission Lines ------

U.S. BUREAU OF RECLAMATION FACILITIES

- Existing Hydro Plant ✚
- Proposed Hydro Plant ✧
- Transmission Lines ——— Kv.
- Projected Transmission Lines ------

N

080-41-9324

Revised Dec. 16, 1941

ANALYSIS OF THE POWER SYSTEMS IN THE TERRITORY TRIBUTARY TO THE COLORADO-BIG THOMPSON PROJECT

By H. S. Sands

Power systems in Northern Colorado, Wyoming, and Western Nebraska are tributary to the project and are in the main interconnected. Drawing No. 9324 shows the principal power systems of this territory. The systems of the U. S. Bureau of Reclamation are shown in red. The projected plants proposed to be constructed by that agency are shown in open red symbols, and the proposed transmission lines are shown by dotted red lines.

It will be noted from the drawing that a transmission line between Leadville and Salida is proposed to connect the Central System of the Public Service Company of Colorado with its Alamosa-Salida system. Another line is proposed between Fort Garland and La Veta to connect the Alamosa-Salida line with the system of the Trinidad Electric Transmission Railway and Gas Company. Although by these proposed connections the Salida-Alamosa and Trinidad territories, together with a portion of northern New Mexico, will become tributary to the project plants, yet it is doubtful whether any power will be actually delivered by the project to these outlying systems. They are, therefore, not considered further in this report.

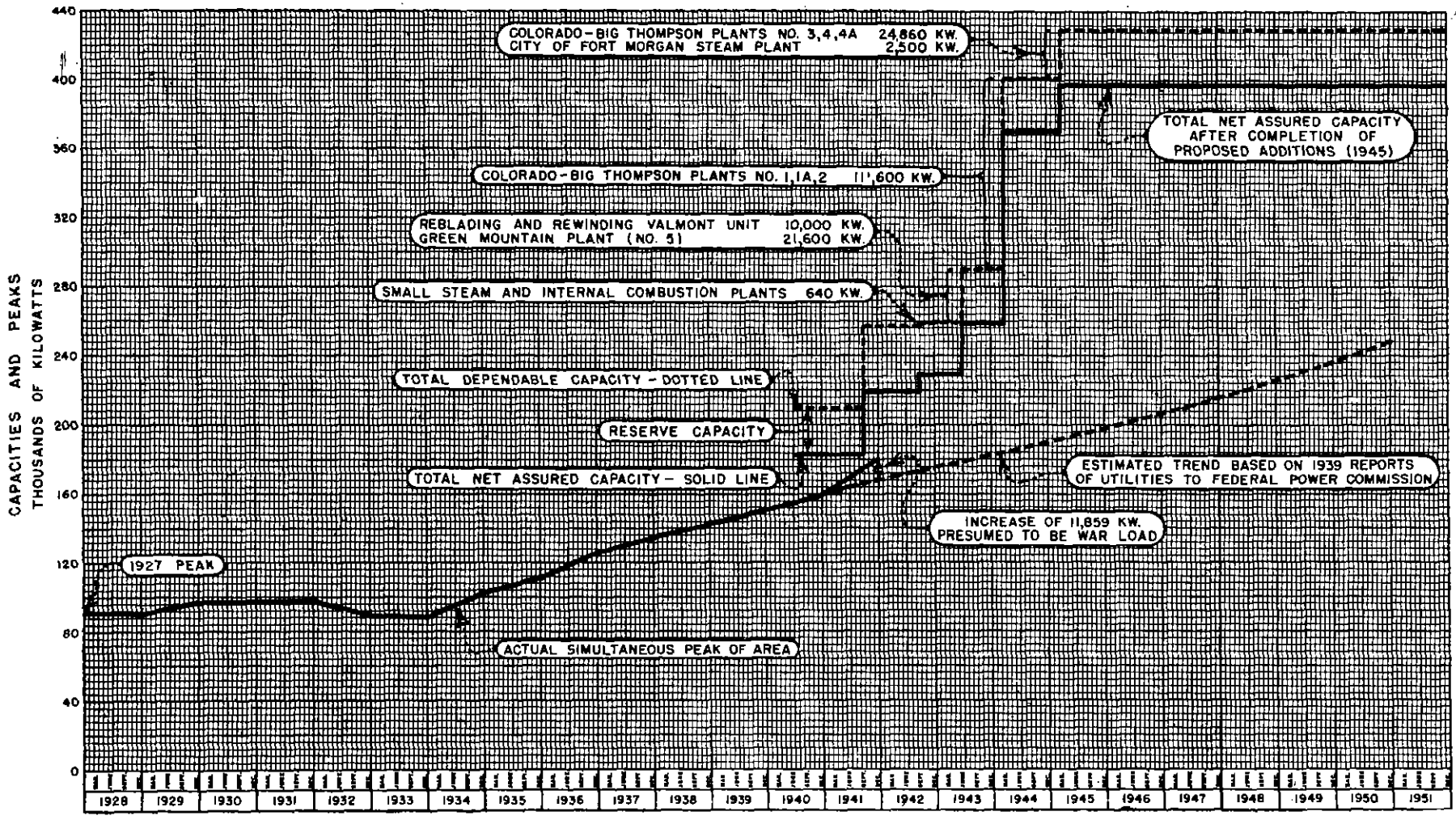
The data for the compilation of this report were obtained from questionnaires submitted to all the systems involved in the described territory. These questionnaires called for actual kilowatt-hour and peak data up to December 1, 1941 and an estimate of the kilowatt-hours and peaks for the month of December, thus bringing the

report up to January 1, 1942. They were also asked to give the capacities as of January 1, 1942 and the expected additions to capacity up to January 1, 1946.

Table 9 gives a list of the various systems included in Colorado, Wyoming, and Western Nebraska, together with the dependable capacity, reserve capacity, the net assured capacity, the 1941 peak in kilowatts, and the 1941 load in kilowatt-hours. It will be noted that the dependable capacity is now 257,521 kilowatts, and that the reserve capacity is 38,282 kilowatts, leaving a net assured capacity of 219,239 kilowatts as the system is now operating.

In the entire area all the systems are interconnected with the exception of the Sterling-Brush system of the Public Service Company of Colorado, City of Fort Collins, and City of Longmont, Colorado, and City of Alliance, Nebraska. The interconnection of the first three with the present interconnected system is comparatively simple of accomplishment. The connection of Alliance with the system will entail the building of not to exceed 15 miles of transmission lines. If all four were interconnected, it would increase the net assured capacity by 9,282 kilowatts, bringing the total net assured capacity up to 228,521.

The 1941 simultaneous peak on the system is 180,479 kilowatts. The new munitions plant at Denver is not taking its full demand as yet from the system, and it is somewhat problematical just what that full demand will be, but a conservative estimate is that it will increase about 4,000 kilowatts above its present demand. Presuming that the interconnection is made with the systems of Sterling-Brush, Fort Collins, Longmont, and Alliance, subtracting from the net assured capacity of 228,521 kilowatts the actual peak of 1941 and the additional capacity



PEAKS AND CAPACITIES OF POWER SYSTEMS TRIBUTARY TO AND INCLUDING COLORADO - BIG THOMPSON PROJECT

(ANNUAL PEAKS SHOWN AT END OF YEAR)

HERBERT S. SANDS, CONSULTING ENGINEER

DENVER, COLORADO DECEMBER 31, 1941

CHART X

reserved for the arms plant, a total of 184,479 kilowatts, there remains an available capacity of 44,042 kilowatts, with possibly some adjustments required in the transmission system, depending on any shifting of load center.

Data are available giving the actual peaks of 1939 and the expected increase in peaks contemplated by the utilities themselves, the prognostications, in some instances, being up to 1944 and in some instances up to 1949. Chart X shows these peak demands and they are regarded herein as the normal growth of the systems involved. It is interesting to note that the 1940 actual peak came within 0.2% of the previously estimated peak for 1940. There is also shown the actual 1941 peak which is 11,859 kilowatts above the estimated normal peak for 1941, and this increase is presumed to be entirely due to war activities. No attempt is made to estimate any future growth in the market above the normal. Under present war conditions it is anticipated that the growth will be rapid, due to increased war activities of various kinds. Chart X also shows the dependable and not assured capacities of all the various systems on January 1, 1940 and January 1, 1942, and the contemplated increases in dependable and not assured capacities up to January 1, 1946. On this chart, it is presumed that the interconnections alluded to above will be made as of October 1, 1942.

Table 10 shows in detail the contemplated additions to the system capacity by years, showing just when it is expected various additions will be made to private utility systems and to the Colorado-Big Thompson Project. Table 10A shows these increases added cumulatively to the dependable capacity as of January 1, 1942; changes in reserve necessary to account for interconnection as above noted, and for necessary increases in adequate reserves; and the resultant net assured capacity.

The following recapitulation indicates the area net assured capacity (assuming interconnection of Sterling-Brush system, Fort Collins, Longmont, and Alliance with the larger system) for the period December, 1939 to December, 1945 and the simultaneous peaks of the area for December, 1939 and 1940 and the area peak for 1941, including 4,000 kilowatts for Denver Ordnance Plant not shown in Table 9 or Chart X:

Chart X:

	Dec. '39	Dec. '40	Dec. '41	Dec. '42	Dec. '43	Dec. '44	Dec. '45
Net Assured Capacity (kw)	190,489	190,489	228,521	229,161	258,261	369,861	397,221
Area Peak (kw)	150,456	159,507	184,479	?	?	?	?
Available Capacity (kw)	40,033	30,982	44,042	?	?	?	?

APPENDIX

LIST OF TABLES

TABLE NO. 1

COLORADO- BIG THOMPSON PROJECT

DIVERSIONS THROUGH CONTINENTAL DIVIDE TUNNEL

(Operation Assuming Holding 100,000 Acre Feet in Granby Reservoir on October First)
Values in 1000 Acre Feet

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ANNUAL	WATER YR.
1901										25.8	25.1	25.8		
02	25.8	23.4	25.8	22.1	8.8	5.1	17.3	25.4	24.7	19.3	18.8	19.3	235.8	255.1
03	19.3	17.6	19.3	17.3	21.9	0.2	12.8	30.8	32.7	26.4	25.8	26.4	250.5	229.3
04	26.4	24.6	26.4	25.6	18.5	4.3	8.5	28.3	32.7	32.9	32.0	32.9	293.1	273.9
1905	21.1	21.1	21.1	21.1	33.8	28.4	33.8	33.8	32.7	27.0	27.0	27.0	327.9	344.7
06	27.0	27.0	27.0	27.3	27.0	18.1	19.2	33.7	32.7	33.8	32.7	33.8	339.3	320.0
07	33.8	30.5	33.8	32.7	25.0	3.7	2.9	24.6	32.7	33.8	32.7	33.8	320.0	320.0
08	33.8	31.6	33.8	32.1	26.5	5.3	11.9	12.1	32.6	33.8	32.7	33.8	320.0	320.0
09	33.8	30.5	33.8	30.4	24.2	4.0	5.2	26.7	31.1	32.9	32.7	33.8	319.1	320.0
1910	33.8	30.5	33.8	27.8	13.7	9.6	23.0	26.9	21.5	33.3	32.7	33.8	310.4	320.0
11	33.8	30.5	33.8	32.6	19.4	0.9	13.1	30.0	26.1	33.8	32.7	33.8	320.5	320.0
12	33.8	31.6	33.8	32.7	22.6	3.8	4.0	24.7	32.7	30.6	32.7	33.8	316.8	320.0
13	33.8	30.5	33.8	30.2	14.9	7.2	18.1	26.4	28.0	33.8	32.7	33.8	323.2	320.0
14	33.8	30.5	33.8	32.6	6.2	5.8	12.1	32.2	32.7	33.8	32.7	33.8	320.0	320.0
1915	33.8	30.5	33.8	26.4	22.5	3.6	12.6	27.7	28.8	33.8	32.2	33.8	319.5	320.0
16	33.8	31.6	33.8	32.2	19.5	2.3	13.3	25.4	28.3	33.8	32.7	33.8	320.5	320.0
17	33.8	30.5	33.8	32.7	16.8	8.0	3.8	28.6	31.7	33.8	32.7	33.8	320.0	320.0
18	33.8	30.5	33.8	32.7	33.8	32.7	33.8	30.1	32.4	29.2	28.2	29.2	380.2	393.9
19	29.2	26.5	29.2	28.0	24.1	19.7	22.7	26.7	27.3	33.8	32.7	33.8	333.7	320.0
1920	33.8	31.6	33.8	32.5	27.3	1.8	9.6	21.9	28.6	33.8	32.7	33.8	321.2	321.2
21	33.8	30.5	33.8	32.7	33.8	32.7	33.8	25.0	30.8	30.5	29.2	30.5	377.1	387.2
22	33.8	30.5	33.8	30.7	18.5	1.0	17.1	24.0	30.3	33.8	32.7	33.8	320.0	309.9
23	33.8	30.5	33.8	32.7	20.3	5.9	7.7	22.3	32.7	33.8	32.7	33.8	320.0	320.0
24	33.8	31.6	33.8	32.6	12.5	2.8	7.6	32.3	32.7	33.7	32.7	33.8	319.9	320.0
1925	33.8	30.5	33.8	28.0	21.0	10.4	16.3	21.0	25.0	33.7	32.7	33.8	320.0	320.0
26	33.8	30.5	33.8	27.0	9.3	10.0	12.0	30.7	32.7	33.8	32.7	33.8	320.1	320.0
27	33.8	30.5	33.8	32.1	16.0	3.2	12.2	25.6	32.5	33.8	32.7	33.8	320.0	320.0
28	33.8	31.6	33.8	32.7	31.0	27.3	24.0	24.9	32.7	33.8	32.7	33.8	372.1	372.1
29	33.8	30.5	33.8	32.7	28.1	4.7	9.3	27.7	23.6	31.1	32.7	33.8	321.8	324.5
1930	33.8	30.5	33.8	30.2	22.8	10.9	18.4	13.7	28.3	33.8	32.7	33.8	322.7	320.0
31	27.5	24.8	27.5	26.3	23.0	17.5	21.3	25.5	26.3	31.0	29.9	31.0	311.6	320.0
32	31.0	28.2	31.0	29.9	21.2	10.5	17.8	28.6	29.9	31.7	30.6	31.7	322.1	320.0
33	31.7	28.8	31.7	30.6	25.4	.0	17.7	29.8	30.3	27.9	27.0	27.9	308.8	320.0
34	27.9	25.2	27.9	27.0	17.7	20.8	27.4	27.9	27.0	17.4	17.0	17.4	280.6	311.6
1935	17.4	15.7	17.4	17.0	28.3	7.6	13.5	31.3	32.7	22.0	21.6	22.0	246.5	232.7
36	22.0	20.8	22.0	25.4	16.1	5.8	19.7	22.5	32.5	30.2	30.5	31.8	279.3	251.0
37	31.8	28.6	21.8	30.5	18.2	2.2	21.3	31.2	30.5	21.0	20.4	21.0	288.5	310.0
38	21.0	19.0	21.0	19.6	21.4	1.7	20.1	31.7	24.8	29.4	28.4	29.4	267.5	242.7
39	29.4	26.7	29.4	28.2	18.7	16.6	26.4	29.0	28.4	22.3	21.6	22.3	299.0	320.0
1940	22.3	20.3	22.3	21.6	15.9	7.4	16.2	22.0	21.6	19.5	18.8	19.5	227.4	235.8
41	19.5	17.7	19.5	18.8	17.7	10.7	24.2	31.1	30.7					247.7
Avge.	30.2	27.6	29.9	28.4	21.1	9.3	16.5	26.8	29.6	30.3	29.6	30.6	309.9	309.9

082-41-91595
Revised Dec. 12, 1941

TABLE NO. 2

COLORADO-BIG THOMPSON PROJECT

BIG THOMPSON RIVER WATER AVAILABLE FOR POWER AT EASTERN SLOPE POWER PLANTS

(Operation Assuming Holding 100,000 Acre Feet in Granby Reservoir on October First)
Values in 1000 Acre Feet

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ANNUAL		
1902					3.0	3.0	0.7						6.7	Power Plant	#1
				3.0	17.0	20.0	8.5	0.4	0.4				49.3	" "	#2
				4.0	20.0	24.7	9.4	0.8	2.1	1.0			62.0	" "	#3
				4.0	20.0	22.3	9.4	0.8	2.1	1.0			59.6	" "	#4
1903				0.1	1.2	7.7	3.5	0.5					13.0	" "	#1
				1.5	11.9	32.5	21.0	3.0					69.9	" "	#2
				3.0	11.9	32.5	21.0	3.0	0	0.5			71.9	" "	#3
				3.0	14.0	23.7	20.9	5.0	1.0	0.5			68.1	" "	#4
1904					2.6	4.0	4.1	0.2					10.9	" "	#1
				0.2	15.3	28.4	25.3	5.5					74.7	" "	#2
				0.9	15.3	28.4	25.3	5.5	0	0.5			75.9	" "	#3
				0.9	16.3	22.5	22.1	6.3	1.4	0.5			70.0	" "	#4
1905				0.6	0	4.3							4.9	" "	#1
				5.3	0	4.3							9.6	" "	#2
				7.0	0	4.3							11.3	" "	#3
				7.2	11.9	15.1	11.9	5.9	0.8				52.8	" "	#4
1906				0.1	2.3	4.1	3.8	0.1					10.1	" "	#1
				2.5	6.8	14.6	14.6	0.1					38.6	" "	#2
				4.0	6.8	14.6	14.6	0.1					40.1	" "	#3
				4.0	21.4	23.8	24.6	4.3	1.9	0.8			80.8	" "	#4
1907					1.2	8.0	8.0	1.0					18.2	" "	#1
					8.8	29.0	30.9	9.2					77.9	" "	#2
					8.8	29.0	30.9	9.2					77.9	" "	#3
				0.1	12.0	23.8	24.6	11.8	1.6	0.7			74.6	" "	#4
1908					0.8	3.6	2.7	2.6					9.7	" "	#1
				0.3	7.3	27.4	21.9	21.5	0.1				78.5	" "	#2
				0.6	7.3	27.4	21.9	21.7	0.1				79.0	" "	#3
				0.6	8.9	23.8	23.5	22.7	3.0	0.5			83.0	" "	#4
1909				0.1	1.1	11.1	8.3	0.9	0.1				21.6	" "	#1
				2.3	9.6	28.7	28.6	7.1	1.6				77.9	" "	#2
				2.3	9.6	28.7	28.6	7.1	1.6	0.9			78.8	" "	#3
				3.7	12.4	23.8	24.6	10.9	6.9	0.9			83.2	" "	#4
1910					1.2	1.7	0.1						3.0	" "	#1
					10.7	16.0	3.5	0.1	0	0.1			30.4	" "	#2
				0.2	13.5	17.5	4.1	0.2	0.6	0.5			36.6	" "	#3
				0.2	13.6	18.3	4.1	0.2	0.6	0.5			37.5	" "	#4
1911					1.5	4.3	1.6						7.4	" "	#1
					13.4	30.1	17.1	1.6	0.1				62.3	" "	#2
				0.1	14.4	31.8	18.0	2.1	1.7				68.1	" "	#3
				0.1	14.4	23.8	19.6	2.1	1.7	0.9			62.6	" "	#4
1912					1.4	6.0	5.0	7.9					20.3	" "	#1
					11.2	28.9	29.8	9.1	0	1.0			80.0	" "	#2
					11.2	28.9	29.8	9.1	0	3.2			82.2	" "	#3
				0.1	14.0	28.3	24.6	10.1	2.3	3.2			82.6	" "	#4
1913					1.9	2.7	1.3	0.2	0				6.1	" "	#1
					14.0	21.5	12.6	3.5	0.2				51.8	" "	#2
					15.5	24.7	14.0	4.0	2.4				60.6	" "	#3
					16.7	23.8	14.0	4.0	3.6	3.6	0.4		64.1	" "	#4
1914				0.1	6.1	7.1	2.8	0.4					16.5	" "	#1
				0.1	27.6	26.9	21.7	1.6					77.9	" "	#2
				0.1	27.6	26.9	21.7	1.6					77.9	" "	#3
				3.8	24.6	23.8	24.6	6.5	2.4				85.7	" "	#4
1915				0.2	0.7	3.7	2.2	0.1					6.9	" "	#1
				3.7	7.6	26.6	18.5	3.6	0.2	0	0.5		60.7	" "	#2
				5.4	9.5	29.1	19.4	4.3	2.5	0	0.5		70.7	" "	#3
				5.4	9.5	23.8	20.3	4.3	2.5	0.2	2.0		68.0	" "	#4
1916					1.4	4.3	2.3	0.6					8.8	" "	#1
				0.5	13.7	30.4	20.5	8.1	1.2				74.4	" "	#2
				0.5	14.3	30.4	20.5	8.4	4.4				78.5	" "	#3
				1.2	16.3	23.8	22.3	8.9	4.5	0.1			77.1	" "	#4
1917					3.1	12.1	9.3	0.6					25.1	" "	#1
					17.0	24.7	30.0	5.2	1.0				77.9	" "	#2
					17.0	24.7	30.0	5.2	1.0				77.9	" "	#3
				1.2	23.6	23.8	24.6	8.7	5.6				87.5	" "	#4
1918								0.1					0.1	" "	#1
								3.7	0.3				4.0	" "	#2
								3.7	0.3				4.0	" "	#3
								3.7	0.3				4.0	" "	#4
1919					0.5	0.7	0.4	0.2					1.8	" "	#1
				0.2	5.1	8.5	6.5	2.5	0.9				23.7	" "	#2
				0.3	9.0	9.0	7.0	2.7	1.0				29.0	" "	#3
				0.3	9.0	9.0	7.0	2.7	1.0				29.0	" "	#4
1920					0.4	6.8	3.2	2.5	0.3				13.2	" "	#1
				0.2	6.5	30.9	24.2	11.9	4.1				77.8	" "	#2
				0.2	6.5	30.9	24.2	11.9	4.1				77.8	" "	#3
				0.2	6.5	22.0	24.2	11.9	4.1				68.9	" "	#4
1921								0.9	0.1				1.0	" "	#1
								8.8	1.9				10.7	" "	#2
								8.8	2.2				11.0	" "	#3
								8.8	2.2				11.0	" "	#4

TABLE NO. 2

COLORADO-BIG THOMPSON PROJECT

BIG THOMPSON RIVER WATER AVAILABLE FOR POWER AT EASTERN SLOPE POWER PLANTS

(Operation Assuming Holding 100,000 Acre Feet in Granby Reservoir on October First)
Values in 1000 Acre Feet

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ANNUAL	
1922					6.2	4.3	1.2	0.4	0				12.1	Power Plant #1
				0.2	7.2	29.2	13.0	6.3	0.4				56.3	" " #2
				0.2	10.5	32.5	13.7	6.8	0.5				64.2	" " #3
				0.2	10.5	23.8	13.7	6.8	0.5				55.5	" " #4
1923					1.4	10.7	7.4	1.6					21.1	" " #1
					13.5	26.8	26.1	11.5					77.9	" " #2
					13.5	26.8	26.1	11.5					77.9	" " #3
				0.5	20.2	23.8	24.6	15.7	3.9	2.0	1.0		91.7	" " #4
1924				0.1	2.8	11.9	4.3	0.1					19.2	" " #1
				0.1	21.3	29.9	26.2	1.5	0	0.1			79.1	" " #2
				0.1	21.3	29.9	26.2	1.5	0	0.1			79.1	" " #3
				3.7	24.6	23.8	24.6	2.8	0.2	0.1			79.8	" " #4
1925					0.3	1.9	1.0	0.4	0.1				3.7	" " #1
					3.7	16.4	10.6	6.0	2.3	0.1			39.1	" " #2
					6.7	17.3	11.3	6.7	2.7	0.1			44.8	" " #3
					6.7	17.3	11.3	6.7	2.7	2.3	0.1		47.1	" " #4
1926				1.6	4.2	8.5	4.9	0.8					20.0	" " #1
				5.7	24.5	22.7	21.8	3.1					77.8	" " #2
				5.7	24.5	22.7	21.8	3.1					77.8	" " #3
				13.0	22.6	23.8	24.6	8.9	0.2				95.1	" " #4
1927					1.0	4.5	2.3	0.5					8.3	" " #1
				0.5	10.4	29.1	19.9	6.9	0.1				66.9	" " #2
				0.6	17.1	29.5	20.9	7.5	0.2				75.8	" " #3
				0.6	17.2	23.8	20.9	7.5	0.2				70.2	" " #4
1928					2.8	5.4	4.3	0.4					12.9	" " #1
					2.8	5.4	9.8	6.3					24.3	" " #2
					2.8	5.4	9.8	6.9					24.9	" " #3
					24.6	23.8	24.6	6.9					79.9	" " #4
1929					0.5	3.6	3.1	2.2	1.0	0.1			10.5	" " #1
					5.7	28.0	24.5	6.1	9.1	2.3			75.7	" " #2
					5.7	28.0	24.5	6.1	9.1	2.7			76.1	" " #3
					9.7	23.8	24.6	19.7	11.3	2.7			91.8	" " #4
1930					9.3	2.1	0.6	1.4					4.4	" " #1
				0.8	3.9	17.6	8.0	12.8	1.0				44.1	" " #2
				1.0	7.4	19.2	10.6	16.4	1.4				56.4	" " #3
				1.0	7.4	19.2	10.6	16.8	1.8				56.8	" " #4
1931					0.5	0.9	0.5	0.2					2.1	" " #1
					4.5	8.8	6.2	2.0					21.5	" " #2
					10.1	15.2	7.9	2.5	0.2				35.9	" " #3
					10.1	18.7	7.9	2.5	0.2				39.4	" " #4
1932					1.3	2.7	1.7	0.2					5.9	" " #1
					9.8	19.4	13.2	2.4					44.8	" " #2
					10.5	22.2	15.5	3.1					51.3	" " #3
					10.5	20.7	15.5	3.1					49.8	" " #4
1933					0.8	6.4	1.8	0.1					9.1	" " #1
					6.3	32.7	14.0	1.9	0.3				55.2	" " #2
				0.3	8.4	32.7	15.3	2.6	0.8				60.1	" " #3
				0.3	13.0	23.8	15.3	2.6	0.8				55.8	" " #4
1934					1.2	0.6							1.8	" " #1
					10.2	6.2	0.5						16.9	" " #2
				0.5	16.1	9.2	1.4	0.1					27.3	" " #3
					17.4	9.2	1.4	0.1					28.1	" " #4
1935					0.6	4.0	2.8	0.2					7.6	" " #1
					5.5	25.1	20.3	2.5					53.4	" " #2
					5.5	25.1	20.3	2.5					53.4	" " #3
					9.9	21.6	20.7	5.6	0.3				58.1	" " #4
1936				0.1	2.3	3.9	2.1	1.1	0.2				9.7	" " #1
				1.6	17.7	26.9	14.1	11.3	0.2				71.8	" " #2
				3.5	17.7	26.9	14.1	11.3	0.2				73.7	" " #3
				3.5	23.8	23.8	20.5	17.7	1.2				90.5	" " #4
1937					1.9	4.4	1.2						7.5	" " #1
					13.6	28.3	10.5	0.6					53.0	" " #2
					15.6	30.5	12.5	1.8	0.1				60.5	" " #3
					18.1	23.2	18.1	1.8	0.1				61.3	" " #4
1938					1.7	4.9	1.8	0	1.0				9.4	" " #1
				0.8	12.4	31.0	13.7	2.1	7.9				67.9	" " #2
				1.3	12.4	31.0	13.7	3.1	7.9	1.3			69.7	" " #3
				1.3	18.3	23.3	18.7	3.4	16.5	1.3			82.8	" " #4
1939					1.3	1.5	0.2						3.0	" " #1
				0.2	10.7	11.8	3.0	0.4					26.1	" " #2
				0.4	16.1	16.1	5.1	0.7					37.4	" " #3
				0.4	15.9	16.7	5.1	0.7					38.8	" " #4
1940					0.6	1.9	0.5						3.0	" " #1
					6.4	14.2	6.1	0.3					27.0	" " #2
					8.5	19.9	9.0	0.8	0.1	0.3			38.6	" " #3
					8.5	19.9	9.0	0.8	0.1				38.3	" " #4
1941					1.8	2.7	0.7						5.2	" " #1
					13.8	20.0	7.3	0.4					41.5	" " #2
				0.7	16.1	22.0	9.6	2.2					50.6	" " #3
				0.7	19.4	20.7	11.4	2.2					54.4	" " #4

COLORADO WATER CONSERVATION BOARD

TABLE NO. 3

COLORADO-BIG THOMPSON PROJECT

NET ENERGY PRODUCTION BY ALL POWER PLANTS

(Operation Assuming Holding 100,000 Acre Feet in Granby Reservoir on October First)
Values in Million Kilowatt Hours

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ANNUAL
1901										56.1	57.8	59.0	
02	58.7	53.6	58.0	53.6	57.4	54.5	63.0	59.9	57.9	45.9	43.2	44.1	649.8
03	43.8	40.0	42.7	41.4	78.0	68.6	79.6	79.5	74.8	61.3	58.9	59.8	728.4
04	59.5	55.3	58.7	56.4	78.4	69.8	76.4	82.0	76.4	76.3	73.8	75.0	838.0
1905	74.5	67.5	73.5	67.0	87.4	92.4	92.6	82.2	73.6	60.3	60.1	59.8	890.9
06	59.3	59.0	57.6	64.6	85.8	84.4	87.7	82.7	79.5	74.9	71.4	73.3	880.2
07	72.8	65.3	71.7	68.2	79.3	82.6	85.0	87.1	78.9	75.0	71.1	73.2	910.2
08	73.1	68.1	73.3	69.2	75.3	66.0	71.7	72.3	76.9	73.7	70.8	72.9	863.3
09	72.6	65.0	70.8	65.7	82.9	86.6	86.8	86.3	82.7	74.4	72.9	75.0	921.7
1910	74.9	67.4	73.6	60.0	55.4	55.5	61.3	68.1	55.0	75.9	73.9	75.8	796.8
11	75.5	67.8	74.6	74.3	84.1	79.0	83.6	79.8	66.0	78.1	74.6	76.4	913.8
12	76.1	70.9	75.4	74.6	87.7	84.1	87.3	95.1	82.8	75.1	76.0	78.0	963.1
13	77.7	70.4	77.3	70.8	74.0	69.8	78.7	72.4	69.1	80.0	75.9	77.5	893.6
14	77.1	69.7	76.6	78.6	85.2	86.9	90.8	90.4	82.6	79.3	76.3	78.3	971.8
1915	78.0	70.5	77.8	71.8	78.2	70.7	73.1	75.7	70.7	78.1	75.6	77.3	897.5
16	77.2	72.2	76.8	77.5	83.7	75.3	81.6	84.8	75.9	78.8	75.8	77.8	937.4
17	77.5	70.1	77.0	77.2	83.6	90.7	91.4	84.7	81.4	77.9	75.3	77.4	964.2
18	80.9	73.5	80.4	78.7	92.6	94.8	98.1	81.9	80.1	72.6	69.9	71.6	975.1
19	71.4	65.3	71.4	69.3	74.3	68.1	69.0	69.8	68.3	80.8	78.0	80.1	865.8
1920	80.0	74.9	79.9	78.7	89.7	83.3	88.8	80.1	78.8	82.2	79.4	81.7	977.5
21	81.3	73.8	81.0	79.2	92.6	94.8	98.1	87.6	80.5	75.6	72.2	75.1	991.8
22	74.9	68.3	74.7	73.0	83.8	67.9	73.7	74.3	71.4	77.7	75.1	77.3	892.1
23	77.3	70.0	77.0	76.8	87.8	89.3	92.7	88.4	82.9	80.5	77.1	78.6	978.4
24	78.3	73.2	78.1	81.3	84.9	87.8	82.5	82.7	79.6	78.7	75.7	77.7	960.5
1925	77.6	70.0	77.8	67.1	62.4	61.4	65.1	65.7	67.1	80.5	76.5	78.3	849.5
26	78.0	70.8	77.9	80.5	85.7	91.2	93.8	87.0	80.4	78.2	75.6	77.7	976.8
27	77.4	70.0	77.2	75.6	77.2	82.8	87.1	82.4	78.6	78.6	76.1	78.2	941.2
28	77.7	72.8	77.5	77.8	100.0	100.7	100.8	81.4	82.6	78.1	75.5	77.5	1002.4
29	77.4	70.1	77.2	78.1	92.5	80.1	85.9	95.0	81.8	78.7	77.1	79.4	973.3
1930	79.1	71.7	78.9	75.3	69.7	69.4	66.1	76.0	71.4	79.0	75.8	77.9	890.3
1931	67.7	61.7	64.9	62.7	70.8	70.7	72.1	74.6	68.1	71.7	69.4	71.1	825.5
32	71.1	64.9	70.7	69.8	77.9	73.4	81.8	76.0	72.2	75.6	73.3	75.1	881.8
33	79.8	68.6	74.4	75.6	82.9	70.1	88.5	78.7	74.3	67.8	65.6	67.1	893.4
34	64.4	58.5	64.0	63.3	70.4	69.6	75.9	75.1	69.1	43.9	38.5	39.3	732.0
35	39.2	35.5	38.6	37.3	77.2	71.7	79.9	84.5	80.1	55.4	54.5	54.9	708.8
36	54.8	51.9	53.9	69.6	90.2	83.8	97.4	91.6	81.2	73.0	73.0	75.4	895.8
37	75.4	68.0	74.4	71.1	78.2	65.1	80.2	76.0	70.9	50.6	48.8	49.8	808.5
38	49.6	45.1	48.4	49.7	84.6	79.8	95.9	85.6	84.4	72.5	69.0	70.7	835.3
39	70.5	64.3	69.5	68.6	76.6	77.6	74.9	70.9	66.8	55.0	53.1	54.4	802.2
1940	54.1	49.5	53.6	52.8	57.5	55.7	57.9	60.9	53.7	47.1	44.5	45.7	633.0
1941	45.5	41.6	46.0	44.6	78.0	75.9	83.2	79.6	76.3				
Avge.	70.3	64.1	69.6	68.2	79.9	77.1	82.0	79.7	74.6	71.4	69.0	70.6	876.5

Revised Dec. 15, 1941 - 080-11-01507

TABLE NO.4

COLORADO - BIG THOMPSON PROJECT

SUMMARY OF POWER PRODUCTION

(Operation Assuming Holding 100,000 Acre Feet in Granby Reservoir on October First.)

UNIT - 1,000,000 Kilowatt Hours.

Year	Month	EASTERN SLOPE POWER PLANTS #1A & #1	#2	#3	#4A	#4	Total of Eastern Slope Power Plants	Green Mt. Power Plant (#5)	Total Power Production All Plants	Power Required for Pumping	Total Net Power Production
1902	Jan.	16.2	27.1	7.4	4.6	3.6	58.9	5.1	64.0	5.3	58.7
	Feb.	14.8	24.6	6.7	4.2	3.3	53.6	5.1	58.7	5.1	53.6
	Mar.	16.2	27.1	7.4	4.6	3.6	58.9	5.1	64.0	6.0	58.0
	Apr.	13.9	26.4	7.5	4.0	5.0	56.8	1.7	58.5	4.9	53.6
	May	7.4	27.1	8.2	1.6	10.9	55.2	2.2	57.4	0	57.4
	June	5.1	26.4	8.5	0.9	11.4	52.3	2.2	54.5	0	54.5
	July	11.2	27.1	7.6	3.1	7.0	56.0	8.9	64.9	1.9	63.0
	Aug.	16.0	27.1	7.5	4.6	3.9	59.1	5.4	64.5	4.6	59.9
	Sept.	15.6	26.4	7.7	4.4	4.5	58.6	3.9	62.5	4.6	57.9
	Oct.	12.2	20.3	5.8	3.4	3.2	44.9	4.1	49.0	3.1	45.9
	Nov.	11.8	19.7	5.4	3.4	2.6	42.9	4.1	47.0	3.8	43.2
	Dec.	12.2	20.3	5.5	3.4	2.7	44.1	4.1	48.2	4.1	44.1
	Annual	152.6	299.6	85.2	42.2	61.7	641.3	51.9	693.2	43.4	649.8
1903	Jan.	12.2	20.3	5.5	3.4	2.7	44.1	4.1	48.2	4.4	43.8
	Feb.	11.1	18.5	5.0	3.2	2.4	40.2	4.1	44.3	4.3	40.0
	Mar.	12.2	20.3	5.5	3.4	2.7	44.1	3.6	47.7	5.0	42.7
	Apr.	10.9	19.7	5.8	3.1	3.9	43.4	1.8	45.2	3.8	41.4
	May	14.6	35.5	9.7	3.2	9.8	73.5	5.5	79.0	1.0	78.0
	June	5.0	34.3	9.4	0.3	11.4	60.4	8.2	68.6	0	68.6
	July	10.3	35.5	9.7	2.3	11.8	69.6	10.0	79.6	0	79.6
	Aug.	19.7	35.5	9.7	5.1	7.3	77.3	7.1	84.4	4.9	79.5
	Sept.	20.6	34.3	9.4	5.0	6.3	75.6	4.9	80.5	5.7	74.8
	Oct.	16.7	27.7	7.7	4.7	3.9	60.7	4.9	65.6	4.3	61.3
	Nov.	16.2	27.1	7.4	4.6	3.6	58.9	4.9	63.8	4.9	58.9
	Dec.	16.7	27.7	7.6	4.7	3.7	60.4	4.9	65.3	5.5	59.8
	Annual	166.2	336.4	92.4	43.7	69.5	708.2	64.0	772.2	43.8	728.4
1904	Jan.	16.7	27.7	7.6	4.7	3.7	60.4	4.9	65.3	5.8	59.5
	Feb.	15.5	25.8	7.0	4.4	3.5	56.2	4.9	61.1	5.8	55.3
	Mar.	16.7	27.7	7.6	4.7	3.7	60.4	4.9	65.3	6.6	58.7
	Apr.	16.1	27.1	7.6	4.6	4.0	59.4	2.4	61.8	5.4	56.4
	May	13.2	35.5	9.7	3.3	10.4	72.1	6.3	78.4	0	78.4
	June	5.2	34.3	9.4	0.8	11.4	61.1	8.7	69.8	0	69.8
	July	8.0	35.5	9.7	1.5	11.8	66.5	9.9	76.4	0	76.4
	Aug.	18.0	35.5	9.7	5.1	7.0	75.3	10.0	85.3	3.3	82.0
	Sept.	20.6	34.3	9.4	5.0	6.5	75.8	5.6	81.4	5.0	76.4
	Oct.	20.7	34.5	9.6	5.1	6.0	75.9	6.0	81.9	5.6	76.3
	Nov.	20.2	33.6	9.2	5.0	5.6	73.6	6.0	79.6	5.8	73.8
	Dec.	20.7	34.5	9.4	5.1	5.7	75.4	6.0	81.4	6.4	75.0
	Annual	191.6	386.0	105.9	49.3	79.3	812.1	75.6	887.7	49.7	838.0
1905	Jan.	20.7	34.5	9.4	5.1	5.7	75.4	6.0	81.4	6.9	74.5
	Feb.	18.7	31.2	8.5	4.6	5.2	68.2	6.0	74.2	6.7	67.5
	Mar.	20.7	34.5	9.4	5.1	5.7	75.4	6.5	81.9	8.4	73.5
	Apr.	17.2	33.6	9.4	4.8	7.2	72.2	1.9	74.1	7.1	67.0
	May	21.4	35.5	9.7	5.1	11.8	83.5	6.7	90.2	2.8	87.4
	June	20.6	34.3	9.4	5.0	11.4	80.7	11.7	92.4	0	92.4
	July	21.4	35.5	9.7	5.1	11.8	83.5	10.2	93.7	1.1	92.6
	Aug.	21.4	35.5	9.7	5.1	8.9	80.6	6.5	87.1	4.9	82.2
	Sept.	20.6	34.3	9.4	5.0	6.2	75.5	3.9	79.4	5.8	73.6
	Oct.	16.6	28.1	7.7	5.1	2.6	60.1	5.1	65.2	4.9	60.3
	Nov.	16.6	28.1	7.7	4.9	2.8	60.1	5.1	65.2	5.1	60.1
	Dec.	16.6	28.1	7.7	5.1	2.6	60.1	5.1	65.2	5.4	59.8
	Annual	232.5	393.2	107.7	60.0	81.9	875.3	74.7	950.0	59.1	890.9
1906	Jan.	16.5	28.1	7.7	5.1	2.6	60.0	5.1	65.1	5.8	59.3
	Feb.	16.5	28.1	7.7	4.6	3.3	60.2	5.1	65.3	6.3	59.0
	Mar.	16.5	28.1	7.7	5.1	2.6	60.0	4.6	64.6	7.0	57.6
	Apr.	16.8	31.0	8.9	1.9	9.4	68.0	2.8	70.8	6.2	64.6
	May	17.9	35.2	9.7	1.8	11.8	76.4	9.4	85.8	0	85.8
	June	13.6	34.1	9.3	2.5	11.4	70.9	13.5	84.4	0	84.4
	July	13.9	35.2	9.7	1.8	11.8	72.4	15.3	87.7	0	87.7
	Aug.	20.7	35.2	9.7	1.3	11.8	78.7	8.0	86.7	4.0	82.7
	Sept.	20.1	34.1	9.3	2.4	11.4	77.3	6.7	84.0	4.5	79.5
	Oct.	20.7	35.2	9.7	5.1	3.4	74.1	6.1	80.2	5.3	74.9
	Nov.	20.1	34.1	9.3	4.9	2.7	71.1	6.1	77.2	5.8	71.4
	Dec.	20.7	35.2	9.7	5.1	3.0	73.7	6.1	79.8	6.5	73.3
	Annual	214.0	393.6	108.4	41.6	85.2	842.8	88.8	931.6	51.4	880.2
1907	Jan.	20.7	35.2	9.7	5.1	3.0	73.7	6.1	79.8	7.0	72.8
	Feb.	18.7	31.8	8.7	4.6	2.2	66.0	6.1	72.1	6.8	65.3
	Mar.	20.7	35.2	9.7	5.1	3.0	73.7	6.1	79.8	8.1	71.7
	Apr.	20.1	34.1	9.3	1.9	7.0	72.4	2.4	74.8	6.6	68.2
	May	16.1	35.2	9.7	2.0	11.8	74.8	5.4	80.2	0.9	79.3
	June	7.2	34.1	9.3	3.0	11.4	65.0	17.6	82.6	0	82.6
	July	6.7	35.2	9.7	2.7	11.8	66.1	18.9	85.0	0	85.0
	Aug.	15.7	35.2	9.7	3.6	11.8	76.0	12.2	88.2	1.1	87.1
	Sept.	20.1	34.1	9.3	3.2	11.4	78.1	5.3	83.4	4.5	78.9
	Oct.	20.7	35.2	9.7	5.1	3.8	74.5	5.3	79.8	4.8	75.0
	Nov.	20.1	34.1	9.3	4.8	2.7	71.0	5.3	76.3	5.2	71.1
	Dec.	20.7	35.2	9.7	5.1	3.0	73.7	5.3	79.0	5.8	73.2
	Annual	207.5	414.6	113.8	46.2	82.9	865.0	96.0	961.0	50.8	910.2

TABLE NO.4

COLORADO - BIG THOMPSON PROJECT

SUMMARY OF POWER PRODUCTION

UNIT - 1,000,000 Kilowatt Hours.

Year	Month	EASTERN SLOPE POWER PLANTS #1A & #1	#2	#3	#4A	#4	Total of Eastern Slope Power Plants	Green Mt. Power Plant (#5)	Total Power Production All Plants	Power Required for Pumping	Total Net Power Production
1908	Jan.	20.7	35.2	9.7	5.1	3.0	73.7	5.3	79.0	5.9	73.1
	Feb.	19.4	32.9	9.0	4.8	2.4	68.5	5.3	73.8	5.7	68.1
	Mar.	20.7	35.2	9.7	5.1	3.0	73.7	5.8	79.5	6.2	73.3
	Apr.	19.7	33.7	9.3	1.7	7.3	71.7	2.3	74.0	4.8	69.2
	May	16.7	35.2	9.7	1.7	11.8	75.1	2.5	77.6	2.3	75.3
	June	5.5	34.1	9.3	2.0	11.4	62.3	3.7	66.0	0	66.0
	July	9.0	35.2	9.7	1.7	11.8	67.4	4.3	71.7	0	71.7
	Aug.	9.0	35.2	9.7	2.2	11.8	67.9	4.4	72.3	0	72.3
	Sept.	20.1	34.1	9.3	3.0	11.4	77.9	4.1	82.0	5.1	76.9
	Oct.	20.7	35.2	9.7	5.1	3.4	74.1	5.4	79.5	5.8	73.7
	Nov.	20.1	34.1	9.3	4.9	2.9	71.3	5.4	76.7	5.9	70.8
	Dec.	20.7	35.2	9.7	5.1	3.2	73.9	5.4	79.3	6.4	72.9
	Annual	202.3	415.3	114.1	42.4	83.4	857.5	53.9	911.4	48.1	863.3
1909	Jan.	20.7	35.2	9.7	5.1	3.2	73.9	5.4	79.3	6.7	72.6
	Feb.	18.7	31.8	8.7	4.6	2.3	66.1	5.4	71.5	6.5	65.0
	Mar.	20.7	35.2	9.7	5.1	3.2	73.9	4.7	78.6	7.8	70.8
	Apr.	18.7	34.1	9.3	1.9	7.9	71.9	1.6	73.5	7.8	65.7
	May	15.5	35.2	9.7	2.0	11.8	74.2	9.6	83.8	0.9	82.9
	June	9.3	34.1	9.3	3.5	11.4	67.6	19.0	86.6	0	86.6
	July	8.3	35.2	9.7	2.8	11.8	67.8	19.0	86.8	0	86.8
	Aug.	16.9	35.2	9.7	2.9	11.8	76.5	12.0	88.5	2.2	86.3
	Sept.	19.1	34.1	9.3	3.7	11.4	77.6	8.8	86.4	3.7	82.7
	Oct.	20.2	34.3	9.7	5.1	3.4	72.7	6.7	79.4	5.0	74.4
	Nov.	20.1	34.1	9.3	4.9	3.1	71.5	6.7	78.2	5.3	72.9
	Dec.	20.7	35.2	9.7	5.1	3.4	74.1	6.7	80.8	5.8	75.0
	Annual	208.9	413.7	113.8	46.7	84.7	867.8	105.6	973.4	51.7	921.7
1910	Jan.	20.7	35.2	9.7	5.1	3.4	74.1	6.7	80.8	5.9	74.9
	Feb.	18.7	31.8	8.7	4.6	2.5	66.3	6.7	73.0	5.6	67.4
	Mar.	20.7	35.2	9.7	5.1	3.4	74.1	5.9	80.0	6.4	73.6
	Apr.	17.1	28.9	8.0	1.9	5.2	61.1	2.7	63.8	3.8	60.0
	May	9.1	25.4	7.8	1.7	7.0	51.0	4.4	55.4	0	55.4
	June	6.9	26.7	7.7	1.7	8.1	51.1	4.4	55.5	0	55.5
	July	14.2	27.6	7.7	1.7	7.7	58.9	4.4	63.3	2.0	61.3
	Aug.	16.5	28.1	7.7	1.7	7.7	61.7	10.0	71.7	3.6	68.1
	Sept.	13.2	22.4	6.3	1.7	5.3	48.9	8.6	57.5	2.5	55.0
	Oct.	20.4	34.8	9.7	5.1	2.8	72.8	8.5	81.3	5.4	75.9
	Nov.	20.1	34.1	9.3	4.9	2.8	71.2	8.4	79.6	5.7	73.9
	Dec.	20.7	35.2	9.7	5.1	3.1	73.8	8.2	82.0	6.2	75.8
	Annual	198.3	365.4	102.0	40.3	59.0	765.0	78.9	843.9	47.1	796.8
1911	Jan.	20.7	35.2	9.7	5.1	3.1	73.8	8.1	81.9	6.4	75.5
	Feb.	18.7	31.8	8.7	4.6	2.2	66.0	7.9	73.9	6.1	67.8
	Mar.	20.7	35.2	9.7	5.1	3.1	73.8	8.0	81.8	7.2	74.6
	Apr.	20.1	33.9	9.3	1.9	7.2	72.4	8.4	80.8	6.5	74.3
	May	12.8	34.1	9.7	1.7	10.7	69.0	15.1	84.1	0	84.1
	June	3.2	32.3	9.3	3.4	11.4	59.6	19.4	79.0	0	79.0
	July	9.0	31.4	8.9	1.4	11.3	62.0	21.6	83.6	0	83.6
	Aug.	18.4	32.9	9.2	1.0	11.6	73.1	10.4	83.5	3.7	79.8
	Sept.	16.0	27.5	7.9	0.9	8.6	60.9	8.9	69.8	3.8	66.0
	Oct.	20.7	35.2	9.7	5.1	3.4	74.1	9.0	83.1	5.0	78.1
	Nov.	20.1	34.1	9.3	4.9	2.6	71.0	9.0	80.0	5.4	74.6
	Dec.	20.7	35.2	9.7	5.1	2.9	73.6	8.9	82.5	6.1	76.4
	Annual	201.1	398.8	111.1	40.2	78.1	829.3	134.7	964.0	50.2	913.8
1912	Jan.	20.7	35.2	9.7	5.1	2.9	73.6	9.0	82.6	6.5	76.1
	Feb.	19.4	32.9	9.0	4.8	2.3	68.4	8.9	77.3	6.4	70.9
	Mar.	20.7	35.2	9.7	5.1	2.9	73.6	9.1	82.7	7.3	75.4
	Apr.	20.1	34.1	9.3	1.7	7.3	72.5	9.6	82.1	7.5	74.6
	May	14.7	35.2	9.7	1.7	11.8	73.1	14.6	87.7	0	87.7
	June	6.0	34.1	9.3	3.4	11.4	64.2	19.9	84.1	0	84.1
	July	5.5	35.2	9.7	3.5	11.8	65.7	21.6	87.3	0	87.3
	Aug.	20.0	35.2	9.7	2.4	11.8	79.1	17.0	96.1	1.0	95.1
	Sept.	20.1	34.1	9.3	2.8	11.4	77.7	9.4	87.1	4.3	82.8
	Oct.	18.8	32.9	9.7	5.1	3.4	69.9	9.4	79.3	4.2	75.1
	Nov.	20.1	34.1	9.3	4.9	3.1	71.5	9.4	80.9	4.9	76.0
	Dec.	20.7	35.2	9.7	5.1	3.4	74.1	9.3	83.4	5.4	78.0
	Annual	206.8	413.4	114.1	45.6	83.5	863.4	147.2	1,010.6	47.5	963.1
1913	Jan.	20.7	35.2	9.7	5.1	3.4	74.1	9.3	83.4	5.7	77.7
	Feb.	18.7	31.8	8.7	4.6	2.5	66.3	9.4	75.7	5.3	70.4
	Mar.	20.7	35.2	9.7	5.1	3.4	74.1	9.3	83.4	6.1	77.3
	Apr.	18.5	31.4	8.6	1.9	6.2	66.6	8.8	75.4	4.6	70.8
	May	10.3	30.1	8.7	1.0	11.8	61.9	12.1	74.0	0	74.0
	June	6.1	29.9	9.1	1.3	11.4	57.8	12.0	69.8	0	69.8
	July	11.9	32.0	9.2	1.0	11.8	65.9	12.8	78.7	0	78.7
	Aug.	16.3	31.1	8.7	1.7	8.3	66.1	9.6	75.7	3.3	72.4
	Sept.	17.2	29.4	8.7	3.3	4.8	63.4	9.4	72.8	3.7	69.1
	Oct.	20.7	35.2	9.7	5.1	4.4	75.1	9.5	84.6	4.6	80.0
	Nov.	20.1	34.1	9.3	4.9	2.9	71.3	9.5	80.8	4.9	75.9
	Dec.	20.7	35.2	9.7	5.1	3.0	73.7	9.5	83.2	5.7	77.5
	Annual	201.9	390.6	109.8	40.1	73.9	816.3	121.2	937.5	43.9	893.6

TABLE NO.4

COLORADO - BIG THOMPSON PROJECT

SUMMARY OF POWER PRODUCTION

UNIT - 1,000,000 Kilowatt Hours.

Year	Month	EASTERN SLOPE POWER PLANTS #1A & #1	#2	#3	#4A	#4	Total of Eastern Slope Power Plants	Green Mt. Power Plant (#5)	Total Power Production All Plants	Power Required for Pumping	Total Net Power Production
1914	Jan.	20.7	35.2	9.7	5.1	3.0	73.7	9.5	83.2	6.1	77.1
	Feb.	18.7	31.8	8.7	4.6	2.2	66.0	9.4	75.4	5.7	69.7
	Mar.	20.7	35.2	9.7	5.1	3.0	73.7	9.4	83.1	6.5	76.6
	Apr.	20.1	34.1	9.3	1.9	8.8	74.2	9.6	83.8	5.2	78.6
	May	7.5	35.2	9.7	3.7	11.8	67.9	17.3	85.2	0	85.2
	June	7.9	34.1	9.3	3.3	11.4	66.0	20.9	86.9	0	86.9
	July	9.1	35.2	9.7	3.4	11.8	69.2	21.6	90.8	0	90.8
	Aug.	20.0	35.2	9.7	2.3	11.8	79.0	14.6	93.6	3.2	90.4
	Sept.	20.1	34.1	9.3	2.4	11.4	77.3	9.2	86.5	3.9	82.6
	Oct.	20.7	35.2	9.7	5.1	3.5	74.2	9.3	83.5	4.2	79.3
	Nov.	20.1	34.1	9.3	4.9	3.2	71.6	9.3	80.9	4.6	76.3
	Dec.	20.7	35.2	9.7	5.1	3.5	74.2	9.2	83.4	5.1	78.3
	Annual	206.3	414.6	113.8	46.9	85.4	867.0	149.3	1,016.3	44.5	971.8
1915	Jan.	20.7	35.2	9.7	5.1	3.5	74.2	9.2	83.4	5.4	78.0
	Feb.	18.7	31.8	8.7	4.6	2.6	66.4	9.1	75.5	5.0	70.5
	Mar.	20.7	35.2	9.7	5.1	3.5	74.2	9.2	83.4	5.6	77.8
	Apr.	16.3	31.3	9.1	1.9	7.0	65.6	9.1	74.7	2.9	71.8
	May	14.2	31.3	9.1	1.4	11.8	67.8	11.4	79.2	1.0	78.2
	June	4.5	31.4	9.3	2.9	11.1	59.2	11.5	70.7	0	70.7
	July	9.1	32.4	9.1	2.1	11.8	64.5	8.6	73.1	0	73.1
	Aug.	17.1	32.6	9.1	0.9	8.2	67.9	10.8	78.7	3.0	75.7
	Sept.	17.7	30.2	8.9	1.0	7.8	65.6	8.8	74.4	3.7	70.7
	Oct.	20.7	35.2	9.7	5.1	3.1	73.8	8.9	82.7	4.6	78.1
	Nov.	19.8	34.1	9.3	4.9	3.4	71.5	8.9	80.4	4.8	75.6
	Dec.	20.7	35.2	9.7	5.1	3.0	73.7	8.9	82.6	5.3	77.3
	Annual	200.2	395.9	111.4	40.1	76.8	824.4	114.4	938.8	41.3	897.5
1916	Jan.	20.7	35.2	9.7	5.1	3.0	73.7	8.9	82.6	5.4	77.2
	Feb.	19.4	32.9	9.0	4.8	2.4	68.5	8.9	77.4	5.2	72.2
	Mar.	20.7	35.2	9.7	5.1	3.0	73.7	8.8	82.5	5.7	76.8
	Apr.	19.8	34.1	9.3	1.7	7.8	72.7	9.0	81.7	4.2	77.5
	May	12.8	34.6	9.7	2.0	11.8	70.9	12.8	83.7	0	83.7
	June	4.1	34.1	9.3	3.0	11.4	61.9	13.4	75.3	0	75.3
	July	9.7	35.2	9.7	2.0	11.8	68.4	13.2	81.6	0	81.6
	Aug.	16.0	34.9	9.7	1.5	11.8	73.9	13.3	87.2	2.4	84.8
	Sept.	17.4	30.7	9.3	1.1	11.4	69.9	9.4	79.3	3.4	75.9
	Oct.	20.7	35.2	9.7	5.1	3.1	73.8	9.4	83.2	4.4	78.8
	Nov.	20.1	34.1	9.3	4.9	2.7	71.1	9.4	80.5	4.7	75.8
	Dec.	20.7	35.2	9.7	5.1	3.0	73.7	9.4	83.1	5.3	77.8
	Annual	202.1	411.4	114.1	41.4	83.2	852.2	125.9	978.1	40.7	937.4
1917	Jan.	20.7	35.2	9.7	5.1	3.0	73.7	9.4	83.1	5.6	77.5
	Feb.	18.7	31.8	8.7	4.6	2.2	66.0	9.3	75.3	5.2	70.1
	Mar.	20.7	35.2	9.7	5.1	3.0	73.7	9.3	83.0	6.0	77.0
	Apr.	20.1	34.1	9.3	1.9	7.6	73.0	9.2	82.2	5.0	77.2
	May	12.2	35.2	9.7	4.2	11.8	73.1	10.5	83.6	0	83.6
	June	12.3	34.1	9.3	4.9	11.4	72.0	18.7	90.7	0	90.7
	July	8.0	35.2	9.7	5.1	11.8	69.8	21.6	91.4	0	91.4
	Aug.	17.9	35.2	9.7	2.2	11.8	76.8	10.4	87.2	2.5	84.7
	Sept.	19.5	34.1	9.3	2.4	11.4	76.7	8.5	85.2	3.8	81.4
	Oct.	20.7	35.2	9.7	5.1	3.0	73.7	8.6	82.3	4.4	77.9
	Nov.	20.1	34.1	9.3	4.9	2.7	71.1	8.6	79.7	4.4	75.3
	Dec.	20.7	35.2	9.7	5.1	3.0	73.7	8.5	82.2	4.8	77.4
	Annual	211.6	414.6	113.8	50.6	82.7	873.3	132.6	1,005.9	41.7	964.2
1918	Jan.	21.2	35.4	9.6	5.1	6.1	77.4	8.6	86.0	5.1	80.9
	Feb.	19.1	32.0	8.7	4.6	5.4	69.8	8.5	78.3	4.8	73.5
	Mar.	21.2	35.4	9.6	5.1	6.1	77.4	8.4	85.8	5.4	80.4
	Apr.	20.5	34.3	9.3	4.9	5.8	74.8	8.7	83.5	4.8	78.7
	May	21.2	35.4	9.6	5.1	6.1	77.4	15.2	92.6	0	92.6
	June	20.5	34.3	9.3	4.9	5.8	74.8	20.0	94.8	0	94.8
	July	21.2	35.4	9.6	5.1	6.1	77.4	21.6	99.0	0.9	98.1
	Aug.	18.9	35.4	9.6	5.1	6.3	75.3	9.9	85.2	3.3	81.9
	Sept.	20.3	34.3	9.3	4.9	5.9	74.7	9.4	84.1	4.0	80.1
	Oct.	18.3	30.6	8.3	5.1	4.2	66.5	9.4	75.9	3.3	72.6
	Nov.	17.7	29.6	8.0	4.9	4.0	64.2	9.4	73.6	3.7	69.9
	Dec.	18.3	30.6	8.3	5.1	4.2	66.5	9.3	75.8	4.2	71.6
	Annual	238.4	402.7	109.2	59.9	66.0	876.2	138.4	1,014.6	39.5	975.1
1919	Jan.	18.3	30.6	8.3	5.1	4.2	66.5	9.3	75.8	4.4	71.4
	Feb.	16.6	27.8	7.5	4.6	3.8	60.3	9.1	69.4	4.1	65.3
	Mar.	18.3	30.6	8.3	5.1	4.2	66.5	9.3	75.8	4.4	71.4
	Apr.	17.6	29.6	8.0	4.9	4.1	64.2	8.5	72.7	3.4	69.3
	May	15.4	30.6	9.4	4.3	7.6	67.3	7.0	74.3	0	74.3
	June	12.7	29.6	8.2	3.5	7.1	61.1	7.0	68.1	0	68.1
	July	14.5	30.6	8.4	4.0	6.5	64.0	7.0	71.0	2.0	69.0
	Aug.	16.9	30.6	8.4	4.7	5.0	65.6	7.6	73.2	3.4	69.8
	Sept.	17.1	29.6	8.0	4.8	4.3	63.8	8.3	72.1	3.8	68.3
	Oct.	21.2	35.4	9.6	5.1	6.1	77.4	8.4	85.8	5.0	80.8
	Nov.	20.5	34.3	9.3	4.9	5.8	74.8	8.4	83.2	5.2	78.0
	Dec.	21.2	35.4	9.6	5.1	6.1	77.4	8.4	85.8	5.7	80.1
	Annual	210.3	374.7	103.0	56.1	64.8	808.9	98.3	907.2	41.4	865.8

TABLE NO.4

COLORADO - BIG THOMPSON PROJECT

SUMMARY OF POWER PRODUCTION

UNIT - 1,000,000 Kilowatt Hours.

Year	Month	EASTERN SLOPE POWER PLANTS #1A & #1	#2	#3	#4A	#4	Total of Eastern Slope Power Plants	Green Mt. Power Plant (#5)	Total Power Production All Plants	Power Required for Pumping	Total Net Power Production
1920	Jan.	21.2	35.4	9.6	5.1	6.1	77.4	8.5	85.9	5.9	80.0
	Feb.	19.8	33.1	9.0	4.7	5.6	72.2	8.4	80.6	5.7	74.9
	Mar.	21.2	35.4	9.6	5.1	6.1	77.4	8.3	85.7	5.8	79.9
	Apr.	20.4	34.3	9.3	4.9	5.9	74.8	8.4	83.2	4.5	78.7
	May	17.4	35.4	9.6	4.8	6.9	74.1	15.6	89.7	0	89.7
	June	5.3	34.3	9.3	2.8	11.4	63.1	20.2	83.3	0	83.3
	July	7.9	35.4	9.6	2.5	11.8	67.2	21.6	88.8	0	88.8
	Aug.	15.3	35.4	9.6	3.9	5.4	69.6	12.0	81.6	1.5	80.1
	Sept.	18.1	34.3	9.3	4.9	6.2	72.8	9.1	81.9	3.1	78.8
	Oct.	21.2	35.4	9.6	5.1	6.1	77.4	9.1	86.5	4.3	82.2
	Nov.	20.5	34.3	9.3	4.9	5.8	74.8	9.1	83.9	4.5	79.4
	Dec.	21.2	35.4	9.6	5.1	6.1	77.4	9.1	86.5	4.8	81.7
	Annual	209.5	418.1	113.4	53.8	83.4	878.2	139.4	1,017.6	40.1	977.5
1921	Jan.	21.2	35.4	9.6	5.1	6.1	77.4	8.9	86.3	5.0	81.3
	Feb.	19.1	32.0	8.7	4.6	5.4	69.8	8.8	78.6	4.8	73.8
	Mar.	21.2	35.4	9.6	5.1	6.1	77.4	9.0	86.4	5.4	81.0
	Apr.	20.5	34.3	9.3	4.9	5.8	74.8	9.1	83.9	4.7	79.2
	May	21.2	35.4	9.6	5.1	6.1	77.4	15.2	92.6	0	92.6
	June	20.5	34.3	9.3	4.9	5.8	74.8	20.0	94.8	0	94.8
	July	21.2	35.4	9.6	5.1	6.1	77.4	21.6	99.0	0.9	98.1
	Aug.	16.3	35.4	9.6	4.4	7.7	73.4	16.1	89.5	1.9	87.6
	Sept.	19.4	34.3	9.4	4.9	6.2	74.2	9.8	84.0	3.5	80.5
	Oct.	19.1	32.0	8.7	5.1	4.7	69.6	9.8	79.4	3.8	75.6
	Nov.	18.3	30.6	8.3	4.9	4.4	66.5	9.8	76.3	4.1	72.2
	Dec.	19.1	32.0	8.7	5.1	4.7	69.6	9.8	79.4	4.3	75.1
	Annual	237.1	406.5	110.4	59.2	69.1	882.3	147.9	1,030.2	38.4	991.8
1922	Jan.	19.1	32.0	8.7	5.1	4.7	69.6	9.8	79.4	4.5	74.9
	Feb.	17.2	29.0	7.8	4.6	4.2	62.8	9.7	72.5	4.2	68.3
	Mar.	19.1	32.0	8.7	5.1	4.7	69.6	9.8	79.4	4.7	74.7
	Apr.	18.1	30.6	8.3	4.9	4.5	66.4	10.8	77.2	4.2	73.0
	May	18.5	32.0	9.6	4.1	8.3	72.5	11.3	83.8	0	83.8
	June	2.7	30.6	9.2	2.8	11.4	56.7	11.2	67.9	0	67.9
	July	11.7	32.0	8.9	3.1	9.0	64.7	9.8	74.5	0.8	73.7
	Aug.	15.4	32.0	8.8	4.3	6.6	67.1	9.9	77.0	2.7	74.3
	Sept.	18.0	30.6	8.3	4.9	4.5	66.3	9.0	75.3	3.9	71.4
	Oct.	20.7	35.2	9.7	5.1	3.0	73.7	9.1	82.8	5.1	77.7
	Nov.	20.1	34.1	9.3	4.9	2.7	71.1	9.1	80.2	5.1	75.1
	Dec.	20.7	35.2	9.7	5.1	3.0	73.7	9.0	82.7	5.4	77.3
	Annual	201.3	385.3	107.0	54.0	66.6	814.2	118.5	932.7	40.6	892.1
1923	Jan.	20.7	35.2	9.7	5.1	3.0	73.7	9.1	82.8	5.5	77.3
	Feb.	18.7	31.8	8.7	4.6	2.2	66.0	9.2	75.2	5.2	70.0
	Mar.	20.7	35.2	9.7	5.1	3.0	73.7	9.2	82.9	5.9	77.0
	Apr.	20.1	34.1	9.3	1.9	7.2	72.6	9.7	82.3	5.5	76.8
	May	13.3	35.2	9.7	4.2	11.8	74.2	13.6	87.8	0	87.8
	June	10.2	34.1	9.3	4.9	11.4	69.9	19.4	89.3	0	89.3
	July	9.3	35.2	9.7	5.1	11.8	71.1	21.6	92.7	0	92.7
	Aug.	14.7	35.2	9.7	3.4	11.8	74.8	15.3	90.1	1.7	88.4
	Sept.	20.1	34.1	9.3	1.9	11.4	76.8	10.0	86.8	3.9	82.9
	Oct.	20.7	35.2	9.7	5.1	3.9	74.6	10.2	84.8	4.3	80.5
	Nov.	20.1	34.1	9.3	4.9	3.1	71.5	10.2	81.7	4.6	77.1
	Dec.	20.7	35.2	9.7	5.1	2.9	73.6	10.1	83.7	5.1	78.6
	Annual	209.3	414.6	113.8	51.3	83.5	872.5	147.6	1,020.1	41.7	978.4
1924	Jan.	20.7	35.2	9.7	5.1	2.9	73.6	10.0	83.6	5.3	78.3
	Feb.	19.4	32.9	9.0	4.8	2.3	68.4	9.9	78.3	5.1	73.2
	Mar.	20.7	35.2	9.7	5.1	2.9	73.6	10.1	83.7	5.6	78.1
	Apr.	20.1	34.1	9.3	1.7	9.1	74.3	11.4	85.7	4.4	81.3
	May	9.4	35.2	9.7	5.1	11.8	71.2	13.7	84.9	0	84.9
	June	9.0	34.1	9.3	4.9	11.4	68.7	19.1	87.8	0	87.8
	July	7.3	35.2	9.7	3.6	11.8	67.6	14.9	82.5	0	82.5
	Aug.	19.9	35.2	9.7	0.3	11.8	76.9	10.1	87.0	4.3	82.7
	Sept.	20.1	34.1	9.3	0.4	11.4	75.3	9.0	84.3	4.7	79.6
	Oct.	20.7	35.2	9.7	5.1	3.3	74.0	9.0	83.0	4.3	78.7
	Nov.	20.1	34.1	9.3	4.9	3.0	71.4	9.0	80.4	4.7	75.7
	Dec.	20.7	35.2	9.7	5.1	3.3	74.0	8.9	82.9	5.2	77.7
	Annual	208.1	415.7	114.1	46.1	85.0	869.0	135.1	1,004.1	43.6	960.5
1925	Jan.	20.7	35.2	9.7	5.1	3.3	74.0	9.0	83.0	5.4	77.6
	Feb.	18.7	31.8	8.7	5.1	1.7	66.0	9.0	75.0	5.0	70.0
	Mar.	20.7	35.2	9.7	4.6	4.0	74.2	9.1	83.3	5.5	77.8
	Apr.	17.2	29.2	8.0	1.9	5.1	61.4	9.1	70.5	3.4	67.1
	May	13.1	25.7	7.9	1.7	7.5	55.9	6.5	62.4	0	62.4
	June	7.5	27.9	7.9	1.7	9.9	54.9	6.5	61.4	0	61.4
	July	10.6	28.0	7.9	1.7	8.4	56.6	8.5	65.1	0	65.1
	Aug.	13.1	28.1	7.9	1.7	7.5	58.3	9.8	68.1	2.4	65.7
	Sept.	15.4	28.4	7.9	1.7	6.8	60.2	10.0	70.2	3.1	67.1
	Oct.	20.7	35.2	9.7	5.1	4.5	75.2	9.6	84.8	4.3	80.5
	Nov.	20.1	34.1	9.3	4.9	3.2	71.6	9.8	81.4	4.9	76.5
	Dec.	20.7	35.2	9.7	5.1	3.4	74.1	9.7	83.8	5.5	78.3
	Annual	198.5	374.0	104.3	40.3	65.3	782.4	106.6	889.0	39.5	849.5

TABLE NO.4

COLORADO - BIG THOMPSON PROJECT

SUMMARY OF POWER PRODUCTION

UNIT - 1,000,000 Kilowatt Hours.

Year	Month	EASTERN SLOPE POWER PLANTS #1A & #1	#2	#3	#4A	#4	Total of Eastern Slope Power Plants	Green Mt. Power Plant (#5)	Total Power Production All Plants	Power Required for Pumping	Total Net Power Production
1926	Jan.	20.7	35.2	9.7	5.1	3.4	74.1	9.7	83.8	5.8	78.0
	Feb.	18.7	31.8	8.7	4.6	2.5	66.3	9.8	76.1	5.3	70.8
	Mar.	20.7	35.2	9.7	5.1	3.4	74.1	9.8	83.9	6.0	77.9
	Apr.	17.5	34.1	9.3	1.9	11.0	73.8	9.5	83.3	2.8	80.5
	May	8.3	35.2	9.7	5.1	11.8	70.1	15.6	85.7	0	85.7
	June	11.3	34.1	9.3	4.9	11.4	71.0	20.2	91.2	0	91.2
	July	10.4	35.2	9.7	5.1	11.8	72.2	21.6	93.8	0	93.8
	Aug.	19.3	35.2	9.7	2.0	11.8	78.0	12.1	90.1	3.1	87.0
	Sept.	20.1	34.1	9.3	0.7	11.4	75.6	9.0	84.6	4.2	80.4
	Oct.	20.7	35.2	9.7	5.1	3.0	73.7	9.1	82.8	4.6	78.2
	Nov.	20.1	34.1	9.3	4.9	2.7	71.1	9.1	80.2	4.6	75.6
	Dec.	20.7	35.2	9.7	5.1	3.0	73.7	9.0	82.7	5.0	77.7
	Annual	208.5	414.6	113.8	49.6	87.2	873.7	144.5	1,018.2	41.4	976.8
1927	Jan.	20.7	35.2	9.7	5.1	3.0	73.7	9.0	82.7	5.3	77.4
	Feb.	18.7	31.8	8.7	4.6	2.2	66.0	9.0	75.0	5.0	70.0
	Mar.	20.7	35.2	9.7	5.1	3.1	73.8	9.0	82.8	5.6	77.2
	Apr.	19.7	34.1	9.3	1.9	7.2	72.2	7.9	80.1	4.5	75.6
	May	10.4	27.5	9.4	1.7	11.8	60.8	16.4	77.2	0	77.2
	June	4.7	33.6	9.3	3.3	11.4	62.3	20.5	82.8	0	82.8
	July	8.9	33.4	9.4	2.0	11.8	65.5	21.6	87.1	0	87.1
	Aug.	16.0	33.8	9.4	0.4	11.8	71.4	13.2	84.6	2.2	82.4
	Sept.	19.9	33.9	9.3	1.0	9.0	73.1	9.4	82.5	3.9	78.6
	Oct.	20.7	35.2	9.7	5.1	2.9	73.6	9.2	82.8	4.2	78.6
	Nov.	20.1	34.1	9.3	4.9	2.7	71.1	9.2	80.3	4.2	76.1
	Dec.	20.7	35.2	9.7	5.1	2.9	73.6	9.2	82.8	4.6	78.2
	Annual	201.2	403.0	112.9	40.2	79.8	837.1	143.6	980.7	39.5	941.2
1928	Jan.	20.7	35.2	9.7	5.1	2.9	73.6	9.2	82.8	5.1	77.7
	Feb.	19.4	32.9	9.0	4.8	2.3	68.4	9.3	77.7	4.9	72.8
	Mar.	20.7	35.2	9.7	5.1	2.9	73.6	9.2	82.8	5.3	77.5
	Apr.	20.1	34.1	9.3	1.7	7.3	72.5	10.0	82.5	4.7	77.8
	May	20.7	35.2	9.7	5.1	11.8	82.5	17.5	100.0	0	100.0
	June	20.1	34.1	9.3	4.9	11.4	79.8	20.9	100.7	0	100.7
	July	17.4	35.2	9.7	5.1	11.8	79.2	21.6	100.8	0	100.8
	Aug.	15.5	32.5	9.1	3.4	11.8	72.3	11.6	83.9	2.5	81.4
	Sept.	20.1	34.1	9.3	3.0	11.4	77.9	9.0	86.9	4.3	82.6
	Oct.	20.7	35.2	9.7	5.1	3.0	73.7	8.9	82.6	4.5	78.1
	Nov.	20.1	34.1	9.3	4.9	2.7	71.1	9.0	80.1	4.6	75.5
	Dec.	20.7	35.2	9.7	5.1	3.0	73.7	8.9	82.6	5.1	77.5
	Annual	236.2	413.0	113.5	53.3	82.3	898.3	145.1	1,043.4	41.0	1,002.4
1929	Jan.	20.7	35.2	9.7	5.1	3.0	73.7	8.9	82.6	5.2	77.4
	Feb.	18.7	31.8	8.7	4.6	2.2	66.0	9.0	75.0	4.9	70.1
	Mar.	20.7	35.2	9.7	5.1	3.0	73.7	9.0	82.7	5.5	77.2
	Apr.	20.1	34.1	9.3	1.9	7.0	72.4	10.5	82.9	4.8	78.1
	May	17.5	35.2	9.7	4.3	11.8	78.5	14.0	92.5	0	92.5
	June	5.1	34.1	9.3	0.7	11.4	60.6	19.5	80.1	0	80.1
	July	7.5	35.2	9.7	0.1	11.8	64.3	21.6	85.9	0	85.9
	Aug.	18.3	35.2	9.7	5.1	11.8	80.1	17.0	97.1	2.1	95.0
	Sept.	15.1	34.1	9.3	3.7	11.4	73.6	10.0	83.6	1.8	81.8
	Oct.	19.1	34.8	9.7	5.1	3.4	72.1	10.0	82.1	3.4	78.7
	Nov.	20.1	34.1	9.3	4.9	3.1	71.5	10.0	81.5	4.4	77.1
	Dec.	20.7	35.2	9.7	5.1	3.4	74.1	10.0	84.1	4.7	79.4
	Annual	203.6	414.2	113.8	45.7	83.3	860.6	149.5	1,010.1	36.8	973.3
1930	Jan.	20.7	35.2	9.7	5.1	3.4	74.1	10.0	84.1	5.0	79.1
	Feb.	18.7	31.8	8.7	4.6	2.5	66.3	10.0	76.3	4.6	71.7
	Mar.	20.7	35.2	9.7	5.1	3.4	74.1	10.0	84.1	5.2	78.9
	Apr.	18.5	32.3	8.9	1.9	6.8	68.4	9.3	77.7	2.4	75.3
	May	14.2	27.8	8.6	1.7	7.4	59.7	10.0	69.7	0	69.7
	June	8.0	29.7	8.6	1.7	11.4	59.4	10.0	69.4	0	69.4
	July	11.7	27.5	8.3	1.7	7.0	56.2	10.4	66.6	0.5	66.1
	Aug.	9.3	27.6	8.6	1.7	11.8	59.0	17.0	76.0	0	76.0
	Sept.	17.4	30.5	8.6	1.7	7.2	65.4	9.1	74.5	3.1	71.4
	Oct.	20.7	35.2	9.7	5.1	3.3	74.0	9.2	83.2	4.2	79.0
	Nov.	20.1	34.1	9.3	4.9	3.0	71.4	9.0	80.4	4.6	75.8
	Dec.	20.7	35.2	9.7	5.1	3.3	74.0	9.1	83.1	5.2	77.9
	Annual	200.7	382.1	108.4	40.3	70.5	802.0	123.1	925.1	34.8	890.3
1931	Jan.	17.3	28.9	7.9	4.9	3.8	62.8	9.1	71.9	4.2	67.7
	Feb.	15.6	26.0	7.1	4.4	3.5	56.6	9.0	65.6	3.9	61.7
	Mar.	17.3	28.9	7.9	4.9	3.8	62.8	6.5	69.3	4.4	64.9
	Apr.	16.5	27.6	7.5	4.7	3.7	60.0	6.5	66.5	3.8	62.7
	May	14.8	28.9	9.5	4.1	8.1	65.4	6.5	71.9	1.1	70.8
	June	11.6	27.6	9.4	3.1	11.4	63.1	7.6	70.7	0	70.7
	July	13.7	28.9	8.4	3.8	6.8	61.6	12.2	73.8	1.7	72.1
	Aug.	16.1	28.9	7.7	4.6	4.3	61.6	16.2	77.8	3.2	74.6
	Sept.	16.5	27.6	7.6	4.7	3.8	60.2	11.5	71.7	3.6	68.1
	Oct.	19.5	32.5	8.9	5.1	5.0	71.0	5.2	76.2	4.5	71.7
	Nov.	18.8	31.4	8.6	5.0	4.8	68.6	5.3	73.9	4.5	69.4
	Dec.	19.5	32.5	8.9	5.1	5.0	71.0	5.3	76.3	5.2	71.1
	Annual	197.2	349.7	99.4	54.4	64.0	764.7	100.9	865.6	40.1	825.5

TABLE NO. 4

COLORADO - BIG THOMPSON PROJECT

SUMMARY OF POWER PRODUCTION

UNIT - 1,000,000 Kilowatt Hours.

Year	Month	Eastern Slope Power Plants #1A & #1	#2	#3	#4A	#4	Total of Eastern Slope Power Plants	Green Mt. Power Plant (#5)	Total Power Production All Plants	Power Required for Pumping	Total Net Power Production
1932	Jan.	19.5	32.5	8.9	5.1	5.0	71.0	5.3	76.3	5.2	71.1
	Feb.	17.7	29.6	8.1	4.8	4.3	64.5	5.3	69.8	4.9	64.9
	Mar.	19.5	32.5	8.9	5.1	5.0	71.0	5.3	76.3	5.6	70.7
	Apr.	18.8	31.4	8.6	5.0	4.8	68.6	5.6	74.2	4.4	69.8
	May	14.1	32.5	9.0	4.6	6.9	67.1	10.8	77.9	0	77.9
	June	8.3	31.4	9.4	1.9	11.4	62.4	11.0	73.4	0	73.4
	July	12.3	32.5	9.5	4.0	8.8	67.1	14.7	81.8	0	81.8
	Aug.	18.1	32.5	9.0	5.1	5.5	70.2	9.5	79.7	3.7	76.0
	Sept.	18.8	31.4	8.6	5.0	4.8	68.6	8.0	76.6	4.4	72.2
	Oct.	19.9	33.3	9.0	5.1	5.2	72.5	8.0	80.5	4.9	75.6
	Nov.	19.2	32.1	8.8	5.0	5.0	70.1	8.0	78.1	4.8	73.3
	Dec.	19.9	33.3	9.0	5.1	5.2	72.5	8.0	80.5	5.4	75.1
	Annual	206.1	385.0	106.8	55.8	71.9	825.6	99.5	925.1	43.3	881.8
1933	Jan.	19.9	33.3	9.0	5.1	10.0	77.3	8.1	85.4	5.6	79.8
	Feb.	18.2	30.2	8.2	4.6	4.8	66.0	7.9	73.9	5.3	68.6
	Mar.	19.9	33.3	9.0	5.1	5.2	72.5	7.8	80.3	5.9	74.4
	Apr.	19.2	32.1	8.8	5.0	5.2	70.3	10.9	81.2	5.6	75.6
	May	16.5	33.3	9.7	4.6	9.8	73.9	10.4	84.3	1.4	82.9
	June	4.0	34.3	9.4	0	11.4	59.1	11.0	70.1	0	70.1
	July	12.2	33.3	9.4	4.8	7.4	67.1	21.4	88.5	0	88.5
	Aug.	18.8	33.3	9.3	5.1	5.7	72.2	10.6	82.8	4.1	78.7
	Sept.	19.1	32.1	8.9	5.0	5.3	70.4	8.2	78.6	4.3	74.3
	Oct.	17.6	29.3	8.0	5.0	3.9	63.8	8.2	72.0	4.2	67.8
	Nov.	17.0	28.4	7.7	4.8	3.8	61.7	8.2	69.9	4.3	65.6
	Dec.	17.6	29.3	8.0	5.0	3.9	63.8	8.1	71.9	4.8	67.1
	Annual	200.0	382.2	105.4	54.1	76.4	818.1	120.8	938.9	45.5	893.4
1934	Jan.	17.6	29.3	8.0	5.0	3.9	63.8	5.5	69.3	4.9	64.4
	Feb.	15.9	26.5	7.2	4.5	3.5	57.6	5.5	63.1	4.6	58.5
	Mar.	17.6	29.3	8.0	5.0	3.9	63.8	5.4	69.2	5.2	64.0
	Apr.	17.0	28.4	7.9	4.8	4.0	62.1	5.5	67.6	4.3	63.3
	May	11.9	29.3	9.7	3.2	10.9	65.0	5.4	70.4	0	70.4
	June	13.5	28.4	8.6	3.7	7.4	61.6	9.0	70.6	1.0	69.6
	July	17.2	29.3	8.2	4.9	4.5	64.1	16.8	80.9	5.0	75.9
	Aug.	17.6	29.3	8.0	5.0	4.0	63.9	16.2	80.1	5.0	75.1
	Sept.	17.0	28.4	7.7	4.8	3.8	61.7	12.5	74.2	5.1	69.1
	Oct.	11.0	18.3	5.0	3.1	2.4	39.8	7.5	47.3	3.4	43.9
	Nov.	10.7	17.8	4.9	3.0	2.4	38.8	3.0	41.8	3.3	38.5
	Dec.	11.0	18.3	5.0	3.1	2.4	39.8	3.1	42.9	3.6	39.3
	Annual	178.0	312.6	88.2	50.1	53.1	682.0	95.4	777.4	45.4	732.0
1935	Jan.	11.0	18.3	5.0	3.1	2.4	39.8	3.1	42.9	3.7	39.2
	Feb.	9.9	16.5	4.5	2.8	2.2	35.9	3.1	39.0	3.5	35.5
	Mar.	11.0	18.3	5.0	3.1	2.4	39.8	3.0	42.8	4.2	38.6
	Apr.	10.7	17.8	4.9	3.0	2.4	38.8	2.5	41.3	4.0	37.3
	May	18.3	35.5	9.7	5.1	8.8	77.4	5.6	83.0	5.8	77.2
	June	7.2	34.3	9.4	1.4	11.4	63.7	8.0	71.7	0	71.7
	July	10.3	35.5	9.7	2.4	11.8	69.7	10.2	79.9	0	79.9
	Aug.	19.9	35.5	9.7	5.1	8.5	78.7	10.6	89.3	4.8	84.5
	Sept.	20.6	34.3	9.4	5.0	7.3	76.6	9.4	86.0	5.9	80.1
	Oct.	13.8	23.1	6.3	3.9	3.1	50.2	9.3	59.5	4.1	55.4
	Nov.	13.6	22.7	6.2	3.9	3.0	49.4	9.3	58.7	4.2	54.5
	Dec.	13.8	23.1	6.3	3.9	3.1	50.2	9.3	59.5	4.6	54.9
	Annual	160.1	314.9	86.1	42.7	66.4	670.2	83.4	753.6	44.8	708.8
1936	Jan.	13.8	23.1	6.3	3.9	3.1	50.2	9.4	59.6	4.8	54.8
	Feb.	13.1	21.8	5.9	3.7	2.9	47.4	9.4	56.8	4.9	51.9
	Mar.	13.8	23.1	6.3	3.9	3.1	50.2	9.4	59.6	5.7	53.9
	Apr.	16.1	28.3	8.3	4.6	5.2	62.5	9.0	71.5	1.9	69.6
	May	11.5	35.5	9.7	4.2	11.8	72.7	17.5	90.2	0	90.2
	June	6.2	34.3	9.4	1.6	11.4	62.9	20.9	83.8	0	83.8
	July	13.7	35.5	9.7	5.1	11.8	75.8	21.6	97.4	0	97.4
	Aug.	14.9	35.5	9.7	4.0	11.7	75.8	17.3	93.1	1.5	91.6
	Sept.	20.6	34.3	9.4	5.8	5.1	75.2	9.3	84.5	3.3	81.2
	Oct.	19.3	31.7	8.6	5.1	5.1	69.8	8.4	78.2	5.2	73.0
	Nov.	19.2	32.0	8.7	5.0	5.0	69.9	8.4	78.3	5.3	73.0
	Dec.	20.0	33.4	9.1	5.1	5.3	72.9	8.4	81.3	5.9	75.4
	Annual	182.2	368.5	101.1	52.0	81.5	785.3	149.0	934.3	38.5	895.8
1937	Jan.	20.1	33.4	9.1	5.1	5.5	73.2	8.5	81.7	6.3	75.4
	Feb.	18.0	30.0	8.2	4.6	4.7	65.5	8.4	73.9	5.9	68.0
	Mar.	20.1	33.4	9.1	5.1	5.5	73.2	8.2	81.4	7.0	74.4
	Apr.	19.2	32.0	8.7	4.9	5.0	69.8	7.4	77.2	6.1	71.1
	May	12.7	33.4	9.7	3.2	11.8	70.8	7.4	78.2	0	78.2
	June	4.4	32.0	9.4	0.4	11.5	57.7	7.4	65.1	0	65.1
	July	14.2	33.4	9.7	3.8	11.8	72.9	7.3	80.2	0	80.2
	Aug.	19.6	33.4	9.4	5.1	5.9	73.4	7.4	80.8	4.8	76.0
	Sept.	19.3	32.0	8.8	4.9	5.0	70.0	6.2	76.2	5.3	70.9
	Oct.	13.3	22.1	6.0	3.7	2.9	48.0	5.9	53.9	3.3	50.6
	Nov.	12.8	21.4	5.8	3.6	2.8	46.4	5.9	52.3	3.5	48.8
	Dec.	13.3	22.1	6.0	3.7	2.9	48.0	5.9	53.9	4.1	49.8
	Annual	187.0	358.6	99.9	48.1	75.3	768.9	85.9	854.8	46.3	808.5

TABLE NO. 4

COLORADO - BIG THOMPSON PROJECT

SUMMARY OF ENERGY PRODUCTION

UNIT - 1,000,000 Kilowatt Hours.

Year	Month	EASTERN SLOPE POWER PLANTS #1A & #1	#2	#3	#4A	#4	Total of Eastern Slope Power Plants	Green Mt. Power Plant (#5)	Total Power Production All Plants	Power Required for Pumping	Total Net Power Production
1938	Jan.	13.3	22.1	6.0	3.7	2.9	48.0	6.0	54.0	4.4	49.6
	Feb.	11.9	20.0	5.4	3.4	2.7	43.4	6.0	49.4	4.3	45.1
	Mar.	13.3	22.1	6.0	3.7	2.9	48.0	5.7	53.7	5.3	48.4
	Apr.	12.3	21.4	6.0	3.5	3.4	46.6	5.8	52.4	2.7	49.7
	May	14.7	35.5	9.7	3.8	11.8	75.5	9.1	84.6	0	84.6
	June	4.1	34.3	9.4	0.3	11.5	59.6	20.2	79.8	0	79.8
	July	13.7	35.5	9.7	3.6	11.8	74.3	21.6	95.9	0	95.9
	Aug.	19.9	35.5	9.7	5.1	6.9	77.1	12.7	89.8	4.2	85.6
	Sept.	16.2	34.3	9.4	4.4	11.5	75.8	11.6	87.4	3.0	84.4
	Oct.	18.6	30.9	8.8	5.1	5.0	68.4	8.7	77.1	4.6	72.5
	Nov.	17.9	29.8	8.2	4.9	4.3	65.1	8.8	73.9	4.9	69.0
	Dec.	18.6	30.9	8.4	5.1	4.3	67.3	8.7	76.0	5.3	70.7
	Annual	174.5	352.3	96.7	46.6	79.0	749.1	124.9	874.0	38.7	835.3
1939	Jan.	18.6	30.9	8.4	5.1	4.3	67.3	8.7	76.0	5.5	70.5
	Feb.	16.8	28.0	7.6	4.6	4.0	61.0	8.5	69.5	5.2	64.3
	Mar.	18.6	30.9	8.4	5.1	4.3	67.3	8.2	75.5	6.0	69.5
	Apr.	17.7	29.8	8.2	4.9	4.3	64.9	8.3	73.2	4.6	68.6
	May	12.6	30.9	9.7	3.3	10.2	66.7	9.9	76.6	0	76.6
	June	11.3	29.8	9.4	3.0	10.4	63.9	13.7	77.6	0	77.6
	July	16.8	30.9	9.0	4.7	6.2	67.6	10.2	77.8	2.9	74.9
	Aug.	18.3	30.9	8.5	5.0	4.6	67.3	8.1	75.4	4.5	70.9
	Sept.	17.9	29.8	8.1	4.9	4.2	64.9	6.9	71.8	5.0	66.8
	Oct.	14.1	23.4	6.4	4.0	3.1	51.0	7.8	58.8	3.8	55.0
	Nov.	13.6	22.7	6.2	3.8	3.0	49.3	7.8	57.1	4.0	53.1
	Dec.	14.1	23.4	6.4	4.0	3.1	51.0	7.7	58.7	4.3	54.4
	Annual	190.4	341.4	96.3	52.4	61.7	742.2	105.8	848.0	45.8	802.2
1940	Jan.	14.1	23.4	6.4	4.0	3.1	51.0	7.8	58.8	4.7	54.1
	Feb.	12.8	21.3	5.8	3.6	2.8	46.3	7.7	54.0	4.5	49.5
	Mar.	14.1	23.4	6.4	4.0	3.1	51.0	7.7	58.7	5.1	53.6
	Apr.	13.6	22.7	6.2	3.9	3.0	49.4	7.6	57.0	4.2	52.8
	May	10.4	23.4	7.0	2.9	6.3	50.0	7.5	57.5	0	57.5
	June	5.9	22.7	7.8	1.3	10.6	48.3	7.4	55.7	0	55.7
	July	10.5	23.4	7.2	2.9	6.6	50.6	7.6	58.2	0.3	57.9
	Aug.	13.8	23.4	6.5	3.9	3.5	51.1	13.0	64.1	3.2	60.9
	Sept.	13.6	22.7	6.2	3.9	3.1	49.5	7.5	57.0	3.3	53.7
	Oct.	12.3	20.5	5.7	3.5	2.9	44.9	5.0	49.9	2.8	47.1
	Nov.	11.8	19.7	5.4	3.4	2.6	42.9	5.1	48.0	3.5	44.5
	Dec.	12.3	20.5	5.6	3.5	2.7	44.6	5.0	49.6	3.9	45.7
	Annual	145.2	267.1	76.2	40.8	50.3	579.6	88.9	668.5	35.5	633.0
1941	Jan.	12.3	20.5	5.6	3.5	2.7	44.6	5.0	49.6	4.1	45.5
	Feb.	11.1	18.6	5.1	3.2	2.5	40.5	5.1	45.6	4.0	41.6
	Mar.	12.3	20.5	5.6	3.5	2.7	44.6	5.2	49.8	3.8	46.0
	Apr.	11.8	19.7	5.6	3.4	3.0	43.5	4.8	48.3	3.7	44.6
	May	12.2	33.1	9.7	3.2	11.8	70.0	8.0	78.0	0	78.0
	June	8.5	32.2	9.4	1.9	11.4	63.4	12.5	75.9	0	75.9
	July	15.7	33.1	9.7	4.3	8.9	71.7	13.2	84.9	1.7	83.2
	Aug.	19.6	33.1	9.7	5.0	6.3	73.7	11.4	85.1	5.5	79.6
	Sept.	19.4	32.2	8.8	5.2	4.7	70.3	11.3	81.6	5.3	76.3

COLORADO WATER CONSERVATION BOARD – ENGINEERING DEPARTMENT.

TABLE NO. 5

COLORADO - BIG THOMPSON PROJECT

DEFICIENCIES IN ENERGY PRODUCTION BELOW 60,000,000 K. W. H.

(Operation Assuming Holding 100,000 Acre Feet in Granby Reservoir on October First)
Values in Million Kilowatt Hours

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ANNUAL
1901										3.9	2.2	1.0	
1902	1.3	6.4	2.0	6.4	2.6	5.5		0.1	2.1	14.1	16.8	15.9	73.2
1903	16.2	20.0	17.3	18.6							1.1	0.2	73.4
1904	0.5	4.7	1.3	3.6									10.1
1905												0.2	0.2
1906	0.7	1.0	2.4										4.1
1907													
1908													
1909													
1910					4.6	4.5			5.0				14.1
				No Deficiencies from January, 1911 to December, 1930, Inclusive.									
1931													
1932													
1933													
1934		1.5								16.1	21.5	20.7	59.8
1935	20.8	24.5	21.4	22.7						4.6	5.5	5.1	104.6
1936	5.2	8.1	6.1										19.4
1937										9.4	11.2	10.2	30.8
1938	10.4	14.9	11.6	10.3									47.2
1939										5.0	6.9	5.6	17.5
1940	5.9	10.5	6.4	7.2	2.5	4.3	2.1		6.3	12.9	15.5	14.3	87.9
1941	14.5	18.4	14.0	15.4									

080-41-91599

COLORADO WATER CONSERVATION BOARD

TABLE NO. 5A

COLORADO-BIG THOMPSON PROJECT

SUMMARY OF ENERGY PRODUCTION - AT ALL EASTERN SLOPE POWER PLANTS

(Operation Assuming Holding 100,000 Acre-Feet in Granby Reservoir on October 1st)

Unit = 1,000,000 Kilowatt-hours

Year	Power Plant #1 & 1A	Power Plant #2	Power Plant #3	Power Plant #4A	Power Plant #4	Total All Plants
1902	152.6	299.6	85.2	42.2	61.7	641.3
03	166.2	336.4	92.4	43.7	69.5	708.2
04	191.6	386.0	105.9	49.3	79.3	812.1
05	232.5	393.2	107.7	60.0	81.9	875.3
06	214.0	393.6	108.4	41.6	85.2	842.8
07	207.5	414.6	113.8	46.2	82.9	865.0
08	202.3	415.3	114.1	42.4	83.4	857.5
09	208.9	413.7	113.8	46.7	84.7	867.8
1910	198.3	365.4	102.0	40.3	59.0	765.0
1911	201.1	398.8	111.1	40.2	78.1	829.3
12	206.8	413.4	114.1	45.6	83.5	863.4
13	201.9	390.6	109.8	40.1	73.9	816.3
14	206.3	414.6	113.8	46.9	85.4	867.0
15	200.2	395.9	111.4	40.1	76.8	824.4
16	202.1	411.4	114.1	41.4	83.2	852.2
17	211.6	414.6	113.8	50.6	82.7	873.3
18	238.4	402.7	109.2	59.9	66.0	876.2
19	210.3	374.7	103.0	56.1	64.8	808.9
1920	209.5	418.1	113.4	53.8	83.4	878.2
1921	237.1	406.5	110.4	59.2	69.1	882.3
22	201.3	385.3	107.0	54.0	66.6	814.2
23	209.3	414.6	113.8	51.3	83.5	872.5
24	208.1	415.7	114.1	46.1	85.0	869.0
25	198.5	374.0	104.3	40.3	65.3	782.4
26	208.5	414.6	113.8	49.6	87.2	873.7
27	201.2	403.0	112.9	40.2	79.8	837.1
28	236.2	413.0	113.5	53.3	82.3	898.3
29	203.6	414.2	113.8	45.7	83.3	860.6
1930	200.7	382.1	108.4	40.3	70.5	802.0
1931	197.2	349.7	99.4	54.4	64.0	764.7
32	206.1	385.0	106.8	55.8	71.9	825.6
33	200.0	382.2	105.4	54.1	76.4	818.1
34	178.0	312.6	88.2	50.1	53.1	682.0
35	160.1	314.9	86.1	42.7	66.4	670.2
36	182.2	368.5	101.1	52.0	81.5	785.3
37	187.0	358.6	99.9	48.1	75.3	768.9
38	174.5	352.3	96.7	46.6	79.0	749.1
39	190.4	341.4	96.3	52.4	61.7	742.2
1940	145.2	267.1	76.2	40.8	50.3	579.6
Average (1902-40)	199.5	382.3	105.6	47.9	74.9	810.2
Percent	24.6	47.2	13.0	5.9	9.3	100.0

TABLE NO. 6

COLORADO-BIG THOMPSON PROJECT

DESCRIPTION OF PRINCIPAL FEATURES WITH ESTIMATED COST

(Estimated cost is that made by the United States Bureau of Reclamation on June 11, 1939)

		ESTIMATED COST Total
CONTINENTAL DIVIDE TUNNEL Under Rocky Mountain National Park from Grand Lake to Estes Park, concrete lined, 9' 6" in diameter. West Portal on East shore of Grand Lake. East Portal on Wind River, 5 miles S.W. of Estes Park	Length 13.07 miles. Capacity 550 c.f.s.	$10,314,000

RESERVOIRS

	Capacity Acre Feet	Maximum Surface Area Acres	Height of Dam	Cost	
GREEN MOUNTAIN On Blue River in Summit County, 16 miles above Kremmling. 52,000 A.F. of storage for replacement	152,000	2,100	258	$5,211,000	
GRANBY On Colorado River in Grand County, 4 miles N.E. of Granby. 20,000 A.F. of dead storage.	482,000	6,943	223	$4,066,000	
SHADOW MOUNTAIN LAKE On Colorado River just below Grand Lake with water surface at same elevation as Grand Lake.	For regulation only	1,356	35	$ 505,000	
HORSETOOTH 4 miles due west of Fort Collins between Big Thompson and Cache la Poudre Rivers.	96,000	1,513	88	$6,006,000	
ARKINS On Buckhorn Creek, tributary of Big Thompson River, 8 miles N.W. of Loveland.	50,000	929	155	$3,134,000	
CARTER LAKE 8 miles S.W. of Loveland between Big Thompson and Little Thompson Rivers	110,000	1,150	243	$2,720,000	
					$21,642,000

COLLECTION AND FEEDER CANALS

	Length Miles	Capacity c.f.s.	Cost	
WILLOW CREEK CANAL Diverts water from Willow Creek into Granby Reservoir. Point of diversion is 6 miles above junction with Colorado River.	14.68	1,000	$ 733,000	
MEADOW CREEK AND STRAWBERRY CREEK CANAL Divertswater from tributaries of Fraser River to Granby Reservoir.	4.67	500	$ 134,000	
GRANBY PUMP CANAL From Granby Pumping Plant at Granby Reservoir to Shadow Mountain Lake	4.80	900	$ 418,000	
HORSETOOTH SUPPLY CANAL From Power Plant #4A (Power Conduit No. 4) to Horsetooth Reservoir.	9.88	250	$1,208,000	
CARTER LAKE SUPPLY CANAL From Power Conduit No. 4 to Carter Lake Reservoir	8.78	300	$ 711,000	
ST. VRAIN FEEDER CANAL From Carter Lake to St. Vrain River	9.76	300	$ 369,000	
BIG THOMPSON FEEDER CANAL From Carter Lake to Cottonwood Creek, tributary of Big Thompson River.	5.37	1,000	$ 155,000	
POUDRE FEEDER CANAL From Horsetooth Reservoir to Lewstons Creek and Poudre Valley Canal	4.75 0.73	1,000 400	$ 633,000	
POUDRE VALLEY CANAL Enlargement of Canal from 500 to 750 cu. ft. per sec.	3.58	750	$ 11,000	
NORTH POUDRE FEEDER CANAL From North Poudre Pumping Plant on Poudre Valley Canal to North Poudre Canal	9.98	150	$ 129,000	
				$ 4,501,000

COLORADO-BIG THOMPSON PROJECT

DESCRIPTION OF PRINCIPAL FEATURES WITH ESTIMATED COST

(Estimated cost is that made by the United States Bureau of Reclamation on June 11, 1939)

					ESTIMATED COST Total
Amount brought forward					$36,457,000
	Length Miles	Capacity c.f.s.		Cost	
POWER CANALS					
POWER CANAL NO. 1 From East Portal of Continental Divide Tunnel to Power Plant No. 1.	3.71	550		$1,263,000	
POWER CANAL NO. 2 From tailrace of Power Plant No. 1 across the Big Thompson River and then downstream along the north side to Power Plant No. 2.	10.62	650		$2,560,000	
POWER CANAL NO. 3 From Tailrace of Power Plant No. 2 across the North Fork of the Thompson River and downstream to Power Plant No. 3.	2.88	650		$ 588,000	
POWER CANAL NO. 3A From diversion dam in Big Thompson River, through a tunnel to the North Fork at the elevation of the tailwater at Power Plant No. 2.	0.39	650		$ 113,000	
POWER CANAL NO. 4 From Tailrace of Power Plant No. 3 across the Big Thompson River and downstream on the south side to Penstocks for Power Plants No. 4 and No. 4A.	4.75	750		$1,289,000	$ 5,813,000
	Effective Head Feet	Plant c.f.s.	Capacity K.W.	Number of Units	Cost
POWER PLANTS					
GREEN MOUNTAIN POWER PLANT NO. 5 12-1/2 miles S.E. of Kremmling on east bank of Blue River immediately downstream from Green Mountain Dam.	225	1500	24,000	2	$1,627,000
POWER PLANT No. 1 On South bank of Big Thompson River about one-half mile east of Estes Park.	704	550	30,000	2	$1,778,000
POWER PLANT NO. 2 On south bank of North Fork of Thompson River one-half mile N.W. of Drake just above junction with Big Thompson River.	1,195	550	50,000	2	$2,325,000
POWER PLANT NO. 3 On north bank of Big Thompson River one-half mile east of Loveland power diversion dam.	328	550	13,000	2	$ 665,000
POWER PLANT NO. 4 On south bank of Big Thompson River two miles east of Cedar Cove just below Power Plant No. 4A	550	400	16,000	1	$ 760,000
POWER PLANT NO. 4A On south bank of Big Thompson River two miles east of Cedar Cove just above Power Plant No. 4.	381	250	7,000	1	$ 420,000 $ 7,575,000
MISCELLANEOUS					
GRANBY PUMPING PLANT On north shore of Granby Reservoir six miles south of Grand Lake. To pump water from Granby Reservoir into Granby Pump Canal to supply Shadow Mountain Lake and Continental Divide Tunnel.	Effective Head Mean = 130 ft.		Capacity Max. 900 c.f.s. Min. 550 c.f.s.		$1,250,000
NORTH POUDRE PUMPING PLANT On banks of Poudre Valley Canal about 8 miles N.W. of Ft. Collins. To supply North Poudre Canal.	Effective Head 187 ft.		Capacity 150 c.f.s.		$ 200,000
ARKINS RESERVOIR INLET CANAL From Big Thompson River just below diversion dam of Handy Ditch to Arkins Reservoir.	Length = 2.33 mi.		Capacity 500 c.f.s.		$ 352,000
COLORADO RIVER IMPROVEMENT Above Kremmling to maintain fishing and to adjust present irrigation system to altered conditions.					$ 300,000
TRANSMISSION LINES AND SUBSTATIONS To connect the various power plants and pumping units of the project as well as transmission of power to market including the Valmont steam plant of the Public Service Company of Colorado.					$2,341,000 $ 4,443,000
			GRAND TOTAL		$54,288,000

051-41-91600-2

SUPPLEMENT TO TABLE NO. 6

COLORADO-BIG THOMPSON PROJECT

ESTIMATED ADDITIONAL COST TO PROVIDE PEAKING BY EASTERN SLOPE POWER PLANTS

	ESTIMATED COST Cost	Total
(Total Estimated cost of Project by United States Bureau of Reclamation, June 11, 1939)		$54,288,000
POWER CANAL NO. 1A Increased cost of Power Canal No. 1 to serve both Power Plant No. 1 and Power Plant No. 1A.	$ 177,000	
NEW POWER PLANT NO. 1A Located at Marys Lake between East Portal of Continental Divide Tunnel and Power Plant No. 1, about 3 miles S.W. of Estes Park. Plant capacity 550 c.f.s. generating 8000 K.W.	$ 708,000	
PONDAGE AT MARYS LAKE Structures to provide sufficient pondage at Marys Lake to enable daily peaking at Power Plant No. 1.	$ 105,000	
ADDITIONAL CAPACITY FOR POWER PLANT NO. 1 Plant capacity increased from 30,000 K.W. to 60,000 K.W. to provide for daily peaking requirements.	$1,988,000	
PONDAGE BELOW POWER PLANT NO. 1 Structures to provide sufficient pondage below Power Plant No. 1 to enable daily peaking at Power Plant No. 2.	$ 227,000	
ADDITIONAL CAPACITY FOR POWER PLANT NO. 2 Plant capacity increased from 50,000 K.W. to 56,000 K.W. to provide for daily peaking requirements.	$ 573,000	
PONDAGE BELOW POWER PLANT NO. 2 Structures to provide sufficient pondage below Power Plant No. 2 to enable daily peaking at Power Plant No. 3. Plant capacity increased from 50,000 K.W. to 56,000 K.W.	$ 127,000	
MISCELLANEOUS Additional Cost of Transmission Lines, Substations and other miscellaneous items.	$ 208,000	
		$ 4,113,000
ESTIMATED TOTAL COST OF PROJECT WITH PROVISIONS FOR PONDAGE AND PEAKING OF ALL POWER PLANTS TO MEET DAILY LOAD REQUIREMENTS, BUT WITHOUT ADDITIONAL STORAGE ON EASTERN SLOPE.		$58,401,000
ESTIMATED INCREASE DUE TO RISE IN PRICES SINCE JUNE 11, 1939		$ 6,599,000
TOTAL ESTIMATED COST OF PROJECT DECEMBER 1941		$65,000,000

051-41-91600-3
Revised December 1941

COLORADO - BIG THOMPSON PROJECT

ESTIMATED ANNUAL OPERATION AND MAINTENANCE EXPENSE

ESTIMATED ANNUAL OPERATION AND MAINTENANCE EXPENSE OF POWER FEATURES OF BASE LOAD PROJECT

		Estimated Expense
HEADQUARTERS		
Headquarters at Power Plant No. 1	$ 1,000	
Warehouse and Machine Shop at Power Plant No. 1	6,000	$ 7,000
POWER PLANT NO. 1		
Power Plant No. 1, Switchyard and Ponstocks (30,000 kw. at $1.20)	36,000	
Power Canal No. 1	15,000	
General Expense	8,500	59,500
POWER PLANT NO. 2		
Power Plant No. 2, Switchyard and Ponstocks (50,000 kw. at $0.90)	45,000	
Power Canal No. 2	20,000	
Operators' Quarters at Power Plant No. 2	500	
General Expense	10,000	75,500
POWER PLANT NO. 3		
Power Plant No. 3, Switchyard and Ponstock (13,000 kw. at $2.08)	27,000	
Power Canals No. 3 and No. 3 A	6,000	
Operators' Quarters at Power Plant No. 3	500	
General Expense	1,600	35,100
POWER PLANT NO. 4		
Power Plant No. 4, Switchyard Ponstock (16,000 kw. at $1.75)	28,000	
Power Plant No. 4	12,000	
Operators' Quarters at Power Plant No. 4	500	
General Expense	3,000	43,500
POWER PLANT NO. 4A		
Power Plant No. 4A, Switchyard and Ponstock (7,000 kw. at $3.40)	23,800	
General Expense	1,600	25,400
POWER PLANT NO. 5		
Power Plant No. 5, Switchyard, Ponstocks and Power Canal	36,000	
Operators' Quarters at Power Plant No. 5	500	
General Expense	5,500	42,000
Estimated Total Annual O & M for Power Plants		$288,000

COLORADO - BIG THOMPSON PROJECT

ESTIMATED ANNUAL OPERATION AND MAINTENANCE EXPENSE

ESTIMATED ANNUAL OPERATION AND MAINTENANCE EXPENSE OF POWER FEATURES OF BASE LOAD PROJECT - (Continued)

		Estimated Expense
Amount Brought Forward		$ 288,000
TRANSMISSION LINES AND SUBSTATIONS		
Transmission Line from Power Plant No. 1 to Granby Pumping Plant (15 miles overhead, 13 miles cable)	$ 3,200	
Two Transmission Lines from Power Plant No. 1 to Valmont (103 Circuit miles at $125. per mile)	12,800	
Transmission Line from Power Plant No. 4 to Greeley (28.5 miles at $125. per mile)	3,600	
Transmission Line from Power Plant No. 4 to North Poudre Pumping Plant (23 miles at $60. per mile)	1,400	
Transmission Line from Power Plant No. 5 to Granby Pumping Plant and from Power Plant No. 5 to Dillon (75 miles at $125. per mile)	9,400	
Substations and Switchyards - 110 kv.	36,300	
Substations - 33 kv.	3,000	67,700
ESTIMATED TOTAL ANNUAL OPERATION AND MAINTENANCE EXPENSE OF POWER FEATURES OF BASE LOAD PROJECT		355,700

ESTIMATED INCREASE IN ANNUAL OPERATION AND MAINTENANCE EXPENSE OF POWER FEATURES OF PEAKING PROJECT OVER BASE LOAD PROJECT

POWER PLANT NO. 1		
Power Plant No. 1, Switchyard and Penstocks (Capacity Increased from 30,000 kw. to 60,000 kw.)	$ 14,400	$ 14,400
POWER PLANT NO. 1A		
Power Plant No. 1A, Switchyard and Penstock (8,000 kw. at $3.00)	24,000	
Power Canal No. 1A. Increase of Power Canal No. 1 to serve Power Plants No. 1 and No. 1A	5,000	
General Expense	1,600	30,600
POWER PLANT NO. 2		
Power Plant No. 2, Switchyard and Penstocks (Capacity Increased from 50,000 kw. to 56,000 kw.)	3,200	3,200
TRANSMISSION LINES AND SUBSTATIONS		
Substations and Switchyards (Increased Capacity at Market)	6,100	6,100
ESTIMATED TOTAL INCREASE IN ANNUAL OPERATION AND MAINTENANCE EXPENSE OF POWER FEATURES		$ 54,300
ESTIMATED TOTAL ANNUAL OPERATION AND MAINTENANCE EXPENSE OF POWER FEATURES OF PEAKING PROJECT		$410,000

COLORADO - BIG THOMPSON PROJECT

ESTIMATED COST OF DEPRECIABLE ITEMS OF POWER FEATURES

ESTIMATED COST OF DEPRECIABLE ITEMS OF POWER FEATURES OF BASE LOAD PROJECT

		Estimated Cost
HEADQUARTERS		
Headquarters at Power Plant No. 1	$ 80,000	
Warehouse and Machine Shop at Power Plant No. 1	80,000	$ 160,000
POWER PLANT NO. 1		
Power Plant No. 1, Switchyard and Penstocks	1,200,000	
Power Canal No. 1	675,000	1,875,000
POWER PLANT NO. 2		
Power Plant No. 2, Switchyard and Penstocks	1,690,000	
Power Canal No. 2	98,000	
Operators' Quarters at Power Plant No. 2	40,000	1,828,000
POWER PLANT NO. 3		
Power Plant No. 3, Switchyard and Penstock	432,000	
Power Canal No. 3	4,100	
Power Canal No. 3A	2,400	
Operators' Quarters at Power Plant No. 3	40,000	478,500
POWER PLANT NO. 4		
Power Plant No. 4, Switchyard and Enlarged Penstock for Feeding Horsetooth Supply Canal	560,000	
Power Canal No. 4	66,000	
Operators' Quarters at Power Plant No. 4	40,000	666,000
POWER PLANT NO. 4A		
Power Plant No. 4A, Switchyard and Penstock	273,000	273,000
POWER PLANT NO. 5		
Power Plant No. 5, Switchyard, Penstocks and Power Canal	650,000	
Operators' Quarters at Power Plant No. 5	48,000	698,000
TRANSMISSION LINES AND SUBSTATIONS		
Transmission Line from Power Plant No. 1 to Granby Pumping Plant	297,000	
Two Transmission Lines from Power Plant No. 1 to Valmont	592,000	
Transmission Line from Power Plant No. 4 to Greeley	156,000	
Transmission Line from Power Plant No. 4 to North Poudre Pumping Plant	52,900	
Transmission Line from Power Plant No. 5 to Granby Pumping Plant and from Power Plant No. 5 to Dillon	317,000	
Substations and Switchyards - 110 kv.	776,000	
Substations and Switchyards - 33 kv.	31,000	2,221,900
ESTIMATED TOTAL COST OF DEPRECIABLE ITEMS OF POWER FEATURES OF BASE LOAD PROJECT		$8,200,400
	Say all	8,200,000

COLORADO - BIG THOMPSON PROJECT

ESTIMATED COST OF DEPRECIABLE ITEMS OF POWER FEATURES

ESTIMATED INCREASE IN COST OF DEPRECIABLE ITEMS OF POWER FEATURES OF PEAKING PROJECT OVER BASE LOAD PROJECT

		Estimated Cost
POWER PLANT NO. 1		
Power Plant No. 1, Switchyard and Penstocks		$1,342,000
POWER PLANT NO. 1A		
Power Plant No. 1A, Switchyard and Penstock	$477,900	
Power Canal No. 1A, Increased Cost of Power Canal No. 1 to serve both Power Plant No. 1 and No. 1A	96,000	573,900
POWER PLANT NO. 2		
Power Plant No. 2, Switchyard and Penstock	411,050	411,050
TRANSMISSION AND SUBSTATIONS		
Substations and Switchyards	145,600	145,600
ESTIMATED TOTAL INCREASE IN COST OF DEPRECIABLE ITEMS		$2,472,550
		Call 2,473,000
ESTIMATED TOTAL COST OF DEPRECIABLE ITEMS OF POWER FEATURES OF BASE LOAD PROJECT		$8,200,000
ESTIMATED TOTAL COST OF DEPRECIABLE ITEMS OF POWER FEATURES OF PEAKING PROJECT		$10,673,000
ESTIMATED INCREASE DUE TO RISE IN PRICES SINCE JUNE 14,1939		1,280,000
ESTIMATED TOTAL COST OF DEPRECIABLE ITEMS OF POWER FEATURES, DEC. 1941		$11,953,000

TABLE NO. 9 LOAD AND SUPPLY DATA FOR POWER SYSTEMS TRIBUTARY TO COLORADO-BIG THOMPSON PROJECT

	Capacities as of January 1, 1942			1941 Peaks	1941 Loads
	Dependable Capacity	Reserves	Net Assured Capacity	kw.	kwh.
INTERCONNECTED SYSTEMS:					
PUBLIC SERVICE CO. OF COLORADO					
Central System	165,500	29,000	136,500	120,150	556,670,324
Estes Park System	880	680	200	Included with Central System	Included with Central System
Grand Junction System	4,710	1,350	3,360	4,800	15,968,140
CHEYENNE LIGHT, FUEL & POWER CO.	5,250	1,500	3,750	6,400	25,331,239
WESTERN PUBLIC SERVICE CO.					
Western Nebraska System	11,415	3,200	8,215	8,250	30,352,023
Laramie System	6,250	3,000	3,250	4,700	21,649,570
MOUNTAIN STATES POWER CO.					
Casper-Guernsey System	4,000	2,500	1,500	4,900	19,050,403
Big Horn-Lander System	190	100	90	5,336	20,519,540
UNITED STATES BUREAU OF RECLAMATION					
North Platte Project	1,800	1,800	0	5,077	23,033,094
Kendrick Project	10,000	0	10,000	2,354	12,590,060
Shoshone Project	5,600	4,000	1,600	558	1,997,769
Riverton Project	1,600	800	800	423	2,169,075
Colorado-Big Thompson Project		No Generating Capacity		2,168	16,067,763
STANOLIND OIL AND GAS CO.	12,500	0*	12,500	5,962	33,948,591
FORT MORGAN, COLORADO	2,250	2,225	25	300	3,292,290
LOVELAND, COLORADO	1,500	600	900	1,060	4,291,450
RAWLINS ELECTRIC CO.	1,410	600	810	0	1,151,280
GLENWOOD LIGHT AND WATER CO.	200	200	0	200	1,498,360
CODY, WYOMING	160	160	0	0	1,254,480
BASIN, WYOMING	316	136	180	380	1,160,000
GRAND COUNTY LIGHT, HEAT & POWER CO.	30	30	0	0	0
KREMMLING LIGHT AND POWER CO.	160	80	80	0	0
REDLANDS WATER AND POWER CO.	1,000	1,000	0	Included with load Grand Junc. Syst.	
WHEATLAND, WYOMING	156	100	56	Included with load No.Platte Proj.	
MORRILL, NEBRASKA	72	72	0	Included with load No.Platte Proj.	
TOTAL INTERCONNECTED SYSTEMS	236,949	29,000**	207,949	171,211#	791,955,451
ISOLATED SYSTEMS:					
PUBLIC SERVICE CO. OF COLORADO					
Sterling-Brush System	5,250	2,250	3,000	3,150	9,883,640
FORT COLLINS, COLORADO	7,000	4,000	3,000	2,760	7,925,623
LONGMONT, COLORADO	3,322	1,032	2,290	1,900	6,757,200
ALLIANCE, NEBRASKA	5,000	2,000	3,000	1,800	5,744,333
TOTAL ISOLATED SYSTEMS	20,572	9,282	11,290	9,610	30,310,796
ALL SYSTEMS OPERATED AS AT PRESENT	257,521	38,282	219,239	180,479#	822,266,247
ALL SYSTEMS OPERATED INTERCONNECTED	257,521	29,000**	228,521	180,479#	822,266,247

Hydro Capacity	53,340
Steam Capacity	191,730
Internal Combustion Capacity	12,451

* Actually backed up by 12,500 kw. at Salt Creek.

** Largest reserve capacity reported for any of the interconnected systems.

\# Estimated simultaneous peak for the year.

TABLE NO. 10

CONTEMPLATED ADDITIONS TO DEPENDABLE CAPACITY
IN NORTHERN COLORADO, WESTERN NEBRASKA, AND WYOMING
AFTER JANUARY 1, 1942

System	1942 kw.	1943 kw.	1944 kw.	1945 kw.
PUBLIC SERVICE CO. OF COLORADO				
Central System		10,000s		
WESTERN PUBLIC SERVICE CO.				
Western Nebraska System	500ic			
FORT MORGAN, COLORADO				2,500s
RAWLINS ELECTRIC CO.	140s			
TOTAL PRIVATE UTILITIES	640	10,000		2,500
COLORADO-BIG THOMPSON PROJECT (Construction as per Drawing 91744)				
Green Mountain (No. 5)		21,600		
Plants No. 1, 1A, 2			111,600	
Plants No. 3, 4, 4A				24,860
TOTAL INCREASE IN DEPENDABLE CAPACITY	640	31,600	111,600	27,360

s - Steam
ic - Internal Combustion

TABLE NO. 10A

SUMMARY OF NET ASSURED CAPACITY AFTER JANUARY 1, 1942

	Dependable Capacity	Reserve	Net Assured Capacity
Conditions as of January 1, 1942	257,521	38,282	219,239
Additions during 1942	640		
Reserve decreased by interconnection of isolated plants		-9,282	
Conditions as of January 1, 1943	258,161	29,000	229,161
Additions during 1943	31,600		
Reserve increased by increase in size of largest unit		2,500	
Conditions as of January 1, 1944	289,761	31,500	258,261
Additions during 1944	111,600		
Conditions as of January 1, 1945	401,361	31,500	369,861
Additions during 1945	27,360		
Conditions as of January 1, 1946	428,721	31,500	397,221